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THE

BRITISH JOURNAL

OF

DENTAL SCIENCE.

VOL. XXXI.

JANUARY—DECEMBER, 1888.

LONDON:
289 & 291, REGENT STREET, W.

#4013

British Journal of Dental Science.

No. 479. LONDON, JAN. 1, 1888. Vol. XXXI.

ODONTOMES.

By J. Bland Sutton, F.R.C.S.,

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2. *Fibrous Odontomes.*—In a developing tooth a portion of the connective tissue in which it is embedded is found to be denser and more vascular than the rest; it also presents a fibrillar arrangement. This condensed tissue is known as the tooth-sac, and when fully developed presents an outer firm wall and an inner looser layer of tissue. At the root of the tooth the follicle wall blends with the dentine papilla, and is indistinguishable from it. Before the tooth cuts the gum it is completely enclosed within this capsule.

The tooth-sac attains a large development in ruminants, especially the inner layer, in order to provide the large deposit of cementum for the crown of the tooth in this group. It must, however, be borne in mind that the follicular-sac is not alone responsible for the cementum.

This large development of the tooth-sac in ruminants is of some interest. In 1885 I described before this Society the skull of a goat which presented in each upper and lower jaw a thick-walled cyst developed in relation with a molar tooth An examination of the walls of these cysts aided by the microscope, showed it to be made up of lamellæ of fibrous tissue undergoing ossification. In the same paper I was able to describe a second case, also in a goat, and refer to one probably of the same nature recorded by Virchow. Since, an additional specimen has come under my notice, also in a goat.

This year I have had the good fortune to find another specimen, in a Dasyure, which died in the Zoological Gardens. The skeleton was everywhere softened by rickets, the lower jaw being so flexible that it could be twisted as easily as gutta-percha. On examining the head, each upper jaw was found to be occupied by a tumour of the size of a walnut; each tumour was distinctly encapsuled, and of a deep flesh colour on section. It is not a little remarkable that in all cases of this form of odontome, the growths are symmetrical. This case differs from that of the goats inasmuch as the upper jaws alone are affected by the tumours. It is a curious fact, in so far as man is concerned, that in nearly all the recorded cases of odontomes the tumour occupied the lower jaw.

On microscopial examination the tumour was found to consist of lamellæ of dense fibrous tissue, enclosing a central softer portion in which the fangs of a molar tooth projected. In many parts of this dense capsule tracts of bony tissue were found. Near the centre of the mass the fibrous layers became attached to the neck of the tooth and seemed to blend with the periodontal membrane. The central softer part of the tumour contained numerous giant cells and embryonic connective tissue; in some of the more successful sections a direct continuity of this tissue with the pulp of the teeth was clearly made out.

The chief difference in this specimen and that of the goat previously described, consists in the circumstances that the tumour in the dasyure was far less ossified than in the goat. Possibly the presence of rickets may help to explain the difference.

The consideration of these fibrous or soft odontomes naturally induced me to search for specimens and evidence bearing upon similar conditions in man, and the result of the inquiry has not been without interest.

In the first place we must remember that Broca, under the term *odontomes embryoplastiques*, included certain cases of fibrous tumours in the upper and lower jaws, and certainly the specimens from the goats and opossum support this view. I am further convinced that several of the tumours described in Mr. Heath's work on the Injuries and Diseases of the Jaws are of this nature.

Among the more suggestive specimens I would especially mention a tumour of the upper jaw, removed from a boy aged seventeen years, preserved in the Museum of St. Thomas's Hospital. It is described as an osteo-fibrous tumour. The firmest point of attachment corresponded to the roots of the first molar, canine, and incisor teeth. The tumour was of rounded form, and had a smooth external surface. The most striking feature in the case is exhibited by a thin section of the tumour dried and preserved to show the amount of calcification. The section shows not only the extent of earthy matter, but exhibits a remarkable laminated arrangement such as occurs in overgrown follicles, and is totally unlike the calcific masses found in calcified fibroids (fibromyomata) of the uterus.

Through the kindness of Mr. S. G. Shattock, I have had an opportunity of examining this tumour microscopically. It is made up of concentric bundles of wavy fibrous tissue, with tracts of calcareous matter interposed. In no part could I find true bone except at the exterior, and this was a thin capsule of true bone formed by the expanded walls of the maxilla.

Another very suggestive case is recorded by Mr. Heath.* On laying open the antrum of a young lady, he was enabled to enucleate with the finger a tumour which had very slight attachments and had all the appearance of a fibroma, but was rich in cell elements. Fourteen years later the patient was in good health.

Virchow quotes Leisering concerning a tumour found in the region of the last molar tooth in the inferior maxilla of a calf. It was polypoid, and measured three by seven and a-half inches. The surface was dotted with papillæ, each tubercle being formed of dentine capped with enamel. The bulk of the tumour consisted of connective tissue, vessels and dentine.

Broca removed from the lower jaw of a child, two-and-a-half years old, a tumour composed mainly of fibrous tissue. In its interior teeth and nodules of dentine coated with enamel and cementum were found. The tumour was made the subject of an elaborate report by Robin.† Broca‡ and Magitôt§ have figured the specimen. Judging from the drawing and the descriptions, I feel disposed to regard it as an overgrown follicle entangling germs of teeth. In fact, a cementoma in course of development.

Letenneur (de Nantes) has described a somewhat similar tumour. In 1859 he removed by enucleation, from the lower jaw of a child aged twelve years, a very large tumour, which appeared to be fibrous in its nature, but which from its singular connection with the teeth differed considerably from ordinary fibromata, and he exhibited it before the Anatomical Society of Paris, 1856, as a disease of the alveolar-dental organs. Subsequently the tumour was examined histologically by Forget and Robin, who had little difficulty in deciding that it had its origin in the dental follicles.

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* "Injuries and Diseases of the Jaws," 3rd Ed.. p. 267.

† Mem. de la Soc. Biologie, 1863; Ser. III, T. iv. p. 301.

‡ "Traité des Tumeurs." Paris, 1867.

§ "Anomalies du Système Dentaire."

Other examples may be mentioned, but the above are sufficient to leave little doubt on the mind that a few fibrous tumours of the jaws are in reality odontomes in course of development.

3. *Cementomata.*—In this variety the bulk of the tumour is made up of cementum, often arranged in layers if the tumour be large. Cementum is a tissue like bone, but presents slight modifications in structure. It contains lacunæ and canaliculi. When the tissue is thick, Haversian canals may be detected. It may perhaps be best described as imperfectly formed bone. Although forming a very small proportion of the teeth of man, nevertheless it is developed to a very large extent in the teeth of many mammals. The lacunæ in the cementum of horses and closely allied forms present one peculiarity which needs mention. They are often furnished with short processes, and confined within well-defined contours. When thus circumscribed they are termed encapsuled lacunœ* They form striking objects under the microscope.

The most typical caces of cementomata occur in horses, and may attain a large size. Their frequent occurrence in the ungulata generally need not surprise us when we remember the abundance of cementum present normally in the teeth of these mammals.

Broca has described specimens of this kind occurring in horses, in connection with the molar teeth, and similar cases have been placed on record by Rosseaux, Goubaux, and Magitôt.

In 1871 Mr. Charles Tomes described in the Transactions of this Society an odontome connected with the molar tooth of a horse. The tumour was five or six times larger than the tooth, and weighed ten ounces.

The description of this tumour contained a careful account of the microscopical characters presented by the odontome which to my mind was very suggestive. The mass was composed entirely of cementum, the outer portions being made up of numerous parallel laminæ of this tissue not differing in any marked characters from that naturally covering the tooth-fang in ungulata. Inside this laminated covering, the tissue was devoid of lamination, and contained bone corpuscles. Also an abundance of those globular forms seen in secondary dentine, or in dentine of imperfect formation.

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* Observed first by Gerber in the cementum of the horse.

It may be mentioned that Forget* describes and figures two specimens of odontomes in horses. One is especially interesting ; it is described as a rare case of dental hypertrophy in a horse. The tumour was situated in the right upper maxilla in the region of the second molar tooth. It weighed more than a kilogramme, and was of irregular shape. It was composed chiefly of cementum, *deposited in successive beds of unequal thickness.*

A careful consideration of such cases left a very strong impression on my mind when studied in connection with the tumours described in the jaws of the goat, namely, that had the goats lived, the soft tumours in their maxillæ would have become completely ossified, and given rise to hard odontomes —in fact, cementomata.

Fortunately, whilst engaged in studying the tumour of the jaw in the dasyure, and the thickwalled cysts, other specimens came to hand, which have enabled me to raise this view from the domain of probability. These specimens will now be considered in detail.

The Museum of the Royal Veterinary College has among its stores a splendid specimen of an odontome in connection with the lower maxilla of a horse. The specimen has never been properly examined, and Principle Robertson, with his usual courtesy, gave me permission to make any examination of the specimen I thought fit.

The tumour occupied the left body of the lower jaw, and had given rise to considerable irritation ; the bone being expanded, inflamed, and drilled in many situations by cloacæ, some being of large size. The incisors and rudimentary canines were normal, but in the place of the molars irregular masses of dental tissue projected above the alveolar margin. The last molar was normal, but the one in front of it was small and ill-devoloped.

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* "Anomalies Dentaires." Paris, 1859.

In connection with this case, attention may be drawn to one circumstance of some importance, which, as far as a careful perusal of the recorded cases shows, is common to all odontomes. It has been already mentioned that the maxilla around this tumour was not only expanded, but showed evidence of inflammation and was perforated by numerous cloacæ. It is curious, but the most prominent symptom of an odontome is inflammatory changes in the surrounding and overlying tissues, and profuse suppuration, leading the surgeon to believe that it is a case of periostitis and necrosis. This suggests that the development of an odontome like that of a tooth causes little or no disturbance, but when the mass in due course commences the process of eruption then trouble begins, as in the analogous case of teeth.

The cut aspect of the odontome is interesting; for it is very evident that at least three tooth-germs are incorporated in the tumour, judging from the disposition of the tissues. Sections were prepared from the periphery of the mass and ground for the microscope. The circumference is made up of cementum of the same peculiar structure which characterises the cementum of the horse's teeth generally, viz. the presence of encapsuled lacunæ. In some parts the sections were thickly beset with them, in other parts only a few could be detected. In some sections a fibrillar arrangement of the matrix was seen, but no lacunæ.

Not content with examining sections of the hard tissue, a large piece was removed from the periphery of the odontome and decalcified in a weak solution of hydrochloric acid. Sections were then prepared for the microscope. The object of this method of examination was to determine, if possible, the original arrangement of the matrix. The experiment was eminently successful, for sections prepared from the outer portions of the odontome exhibited, very clearly, the laminated disposition of the fibrous tissue seen in the soft tumours of the goat's jaw.

Thus the examination of this odontome has served still further to convince me that, at any rate, some odontomes are to be regarded as originating in overgrown tooth follicles which later become cementum. This mode of origin applies only to the cementomata.

The odontome sketched in Broca's "Traité des Tumours," bears out this conclusion. It represents a section through the molar tooth of a horse. The crown is not quite complete, but the formed portion is perfectly regular, and had been used in mastication. Its fangs are embedded in a mass of cementum, as determined by the microscope. The cementum, is continued along the side of the tooth to the crown.

Such a mode of development of the cementoma is in a measure satisfactory, for it serves to explain how two or more tooth-germs can be involved in one odontome. The follicle of the affected tooth enlarging, naturally would encroach upon the contiguous teeth, which in the early or soft stage of the tumour would be incorporated with its periphery.

Apart from the direct examination of this tumour, there are several facts indicative of the same conclusion.

If we look at the tumour of the goat we find that in addition to the encysted molar, two other teeth are accommodated with recesses in its substance; had this mass ossified, these teeth would have been incorporated with it.

Compare with this the specimen from the opossum. In addition to the molar whose fangs are directly associated with the centre of the tumour, the fangs of the teeth anterior and posterior to it are involved in the fibrous tissue. Had this mass calcified or ossified, these teeth would have constituted a part of the odontome.

It is important to be clear on this matter, because it may be argued, that inasmuch as these tumours contain enamel and dentine in addition to the investing capsule of cementum, they should rank with the composite odontomes to be described later. The distinction is very clear. Cementomata arise from the ossification of a follicle, thus sequestrating the teeth in connection with it, but composite odontomes originate in aberration of the entire germ in addition to the follicle.

Among classical odontomes, the most typical specimen, which illustrates well the characters macroscopical and microscopical of a cementoma is that recorded by Dr. Forget from the lower jaw of a man aged forty. Before operating on the tumour, Maisonneuve, in whose practice the case occurred, determined to extract a decayed molar, and the odontome came away with it. Under the microscope the tumour, which was of the size of a pigeon's egg, consisted of cementum only. Broca, in his "Traité des Tumeurs," Tom. II, gives a drawing representing a vertical section through this odontome from which it will be seen that this tumour, like the horse's cementoma, presents a central cavity. The shape, disposition, and structure of this odontome allow no escape from the conclusion that it had its origin in an overgrown, but ossified, dental follicle.

This opinion is further strengthened by the evidence furnished by Magitôt* after a re-examination of the specimen. This observer detected by the microscope two prolongations of dentine which seemed to form the boundary of a large cavity; this he regarded as the remains of the pulp chamber.

c. *Aberrations of the Papilla.*

Radicular Odontomes.—This term is applied to odontomes which arise after the crown of the tooth has been completed and whilst the roots are in the process of formation. As the crown of the tooth, when once formed, is unalterable, it naturally follows that should the root develop an odontome, enamel cannot enter into its composition, which, for the most part, would consist of dentine and osteo-dentine in varying proportions, these two tissues being the result of the activity of the papilla.

When such a tumour consists mainly or entirely of dentine it may be termed a *radicular dentoma.* If osteo-dentine preponderates, then the tumour may be called a *radicular osteo-dentoma*; or if cementum, then it is a *radicular cementoma.* The terms in each instance clearly set forth the source of the tumour as well as indicating the structural characters.

As a typical radicular odontome, we may choose the well-known specimen described by Salter. In this specimen the tumour is clearly connected with the fangs. The outer layer of the odontome is composed of cementum; within this is a layer of dentine, deficient in the lower part of the tumour; within this is a nucleus of calcified pulp.

The excellent specimen has been made the subject of a careful study by Mr. Charles Tomes. At some point there has sprung from the dentinal pulp an outgrowth, which has completely enveloped the fangs, and grown out into a lobulated mass.

To be continued.

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* "Traité des Anomalies du Système Dentaire," Plate XIX, Fig. 2.

DISCUSSION UPON THE USES AND DANGERS OF COCAINE.*

(*Continued from page* 1064).

Mr. Brown-Mason said: Dr. Cunningham would appear to have been particularly unfortunate in his experience of cocaine after injection, as shown in the tabulated cases published in the Society's Transactions for May. As one who had used cocaine on from eighty to hundred occasions, he was gratified in being able to say he had not met with any such unfortunate cases as those narrated by Dr. Cunningham. He was induced to take notes of his cases by reading Dr. Cunningham's communication, and by the inquiry form sent out by the Society requesting individual experience; but of a long series of unreported cases, he could only associate one with any marked toxic effects. The patient was a lady, who had been forbidden by her medical attendant taking any form of general anæsthetic. He injected 1 grain of cocaine (hydrochlorate) dissolved in 5 minims of water, and extracted a bicuspid from the upper jaw which had given rise to alveolar abscess. After the operation the patient remained in a faint condition for some ten minutes, but he had seen this lady in quite a similar condition upon a previous occasion when he had operated upon her without any anæsthetic being employed.

In another instance he removed for a medical friend the roots of a lower wisdom tooth, standing by itself. This was a very successful case, as the injection of 1 grain enabled him to divide the roots and extract both fangs by means of an elevator. In spite of the fact that this operation was necessarily prolonged, the patient, who as a surgeon naturally noticed keenly the effects of the drug, declared he felt no pain.

Referring to the cases he had placed before the Society at the present meeting, he said, an analysis would show that of twenty cases, thirteen were unquestionably unsuccessful, while six were successful in a less degree, the patient experiencing slight pain.

In the case numbered 2 there was entire absence of anæsthesia, the operation being as painful as if no anæsthetic had been used. In this case there was loss of sensation about the superficial area of the tooth, and the corresponding region of gum. The injection was only half a grain. Out of twenty cases only one showed subjective phenomena: in this a slight feeling of approaching faintness occurred, which passed off in a short while, and this was described by the patient as a sensation of "wanting more air." As this person was in a highly nervous state before the injection, the pulse being as rapid as 120 per minute, the effects described might, in his judgment, be accounted for by other causes rather than the injection of the drug. Objective phenomena were observed in eight cases, and consisted of a slight crying, tingling, and trepidation of the limbs, and arrest of the salivary secretion. The mental changes were remarkable only in four cases, and consisted of loquacity, hilarity, a readiness to undergo prolonged operations if necessary, and a feeling as if alcoholic stimulants had been taken. The observations made upon the pulse rate showed an acceleration varying from 10 to 50 beats per minute; in one case only, no alteration in the pulse rate occurred after injection. With the exception of the case quoted above, in which half a grain was used, all the injections consisted of 1 grain dissolved in 5 minims of water, and introduced half on the outer, and half on the inner side of the alveolus. His plan is to keep the drug in tubes holding the precise dose, and to make the solution fresh and fresh each time it is required. In conclusion, he said that his experience had been that of Mr. Hern, when that gentleman said, "Cocaine, although not all that could be wished, is yet one of the most powerful local anæsthetics which have been introduced to the profession of late years, and is a valuable and material addition to the dental pharmacopeia."

Mr. Henri Weiss said he had employed cocaine in between thirty and forty cases, noting the results. Using a 10 per cent. aqueous solution of Howard's hydrochlorate of cocaine he found 10 minims injected into the gums produced perfect local anæsthesia, except in cases in which periosteal trouble existed. He had met with only two cases in which any unpleasant manifestations occurred. In one, after injection of 10 minims of an aqueous 10 per cent. solution into the gum of a rather nervous man, he left the room, and upon his return the patient complained of symptoms resembling the "aura" of epilepsy. He pooh-poohed these symptoms and proceeded to operate, and no ill-effects followed. In his second case he was anxious to fix a Richmond crown, and as previous manipulation had rendered the gum tender he injected cocaine. The patient, a young lady, complained of feeling faint; upon closing her eyes this passed off. After three minutes she felt better, but still giddy when her eyes were open. After ten minutes she expressed herself as being quite well. His experience led him to the fact, that, in many instances, we meet with so-called constitutional effects, which are frequently very distressing, but such effects, he believes, are really due, not to the drug, but to a species of hysteria called forth by the measures and precautions adopted to counteract the supposed symptoms. He thought that if practitioners would take it for granted that some slight faintness, and so on, would usually occur after injecting cocaine, and would take no notice of such symptoms, the patient would attach no importance to them, and would not exaggerate their gravity by superadding hysterical manifestations. He suggested that operative measures should be proceeded with, no regard being had to any such symptoms. For his own part he should continue the use of cocaine, and should be prepared to meet with unpleasant symptoms, attaching no importance to them.

Mr. J. C. Storey said he had investigated some fifty cases, and had reported these to the Society upon the inquiry form issued by it. Since forwarding these he had paid especial attention to the question, how long a time must elapse between the injection of cocaine and the extraction, if perfect local anæsthesia is desired, and was satisfied that from the commencement of injection (which may be conducted leisurely) to the time of extraction not less than six or seven minutes must intervene. He almost uniformly used 1 grain of the hydrochlorate, dissolved, at the time, in warm water.

Five cases of especial interest were worth particular mention. In the first he injected 1 grain of hydrochlorate of cocaine, dissolved in 10 minims of water. The patient was a page boy, from whom he removed a right upper molar tooth. This was extracted three minutes after completion of injection. Slight pain was experienced just as the forceps were being pushed up. At the same sitting he extracted the corresponding tooth upon the opposite side, but without the injection of cocaine, and the boy experienced considerable pain, declaring he would never have another tooth out unless he had something to deaden the pain. There were no after effects. The next three cases were those of girls, aged between fourteen and fifteen, belonging to an Orphan Asylum. Girls of this class are, he need hardly remark, very prone to make a good deal of noise, if at all hurt. For the first of these he had to remove some right upper molar stumps. He injected 1 grain in 10 minims of warm water, and waited five minutes from the time of the completion of the injection to the extraction. The pain was almost *nil*, and the only constitutional symptom noted was a slight increase in the pulse rate. In the second of these girls, he removed the first right upper molar; he injected the same quantity of cocaine, and allowed the same time to elapse as in the preceding case. Little if any pain was felt; the girl appeared hardly to feel the operation, and revealed no after constitutional effects. In the fourth case he extracted the first right upper bicuspid, using the same injection and taking the same time as before. No pain whatever was experienced, and no constitutional symptoms appeared—indeed, the girl remarked she "would not mind having another tooth taken out like that." The fifth case was that of a medical man to whom he administered 9-10ths of a grain of the hydrochlorate of cocaine, after painting the gum with solution (1 per cent.) of cocaine. He extracted 6½ minutes after injection. The patient, who was thirty-six years old, felt no pain at the time of the injection, but about the time of the extraction was evidently experiencing considerable stimulating effect, as he, although previously nervous and fearful of the extraction, now became careless of pain and anxious for the operation, that he might observe the effects of the drug. This patient noted a feeling of fulness and heat in the region of the medulla oblongata and down the spinal cord, and five minutes later, similar sensations were present over the precordial region. In half-an-hour a gradual return to his normal condition occurred. He spoke of a sensation of numbness in the upper lip and the left side of his face. This patient was an extremely temperate man; the parts were rendered more sensitive by the presence of an alveolar abscess about the tooth—the left upper anterior bicuspid.

Mr. Boyd Wallis said, it was now fully ascertained that the salts of cocaine were subject to impurities, and that various samples differed very materially in the amount of deleterious matter present. A body Hygrin, which was frequently if not always found in samples of the hydrochlorate of cocaine, possessed no anæsthetic properties, but was not devoid of injurious qualities, and was distinctly irritating. He had tested the various preparations of cocaine upon himself, to the extent of some 30 grains by injection, and 5 grains at one dose internally, and although some of them contained impurities, no unpleasant symptoms ensued. He was anxious to know whether the pure *alkaloid*, rather than its salts, had been employed; he had called attention some months ago to the value of the *alkaloid* for dental purposes, and now wished to suggest that its solution in *ether* would be advantageous, both because the ether might antidote the depressant action of the alkaloid upon the heart, and also because it was a perfect solvent for the alkaloid. Although it was true that the alkaloid of coca takes longer to act than the more soluble salts, yet he believed its greater safety, when administered in combination with ether, and the fact of the anæsthesia produced by its being more permanent, fully counterbalanced this drawback. His experience with the ether and alkaloid combination, had been too limited for him to speak with absolute confidence, but thus far the results had been highly satisfactory. As others were waiting to speak on this question he would not detain the Society by going into details of cases, but content himself by calling attention to the specimens which he now exhibited of the coca leaf—crude cocaine as imported; the pure alkaloid, and its several salts; together with the amorphous substance known as "Hygrin," a liquid alkaloid from the coca leaf, and found in the mother liquors after the extraction of cocaine; it had an alkaline reaction, and combined readily with acids to form saturated compounds (salts); it was extremely irritating, and the non-crystallization of the salts was due to an admixture of hygrin.

Mr. D. Browning said he had two cases which might interest the Society. One was the extraction of the right upper canine. He injected 2 minims of a 15 per cent. solution of hydrochlorate of cocaine on the buccal and 2 minims on the palatal surface of the gum, and these injections acted perfectly, and he extracted the tooth without the patient experiencing the slightest pain. The patient, however, felt very giddy, and this persisted for an hour, after which time she left the surgery and proceeded home. On her road to her own house she had a return of this vertigo, and had to stop several times to collect herself. The next day she found herself partially paralysed, and was unable to lift with the arm, or to move the leg upon the side of the injection. These disagreeable symptoms lasted forty-eight hours. In the other case he had to extract a left upper wisdom tooth, and for this purpose he injected 6 minims of a 15 per cent. solution of hydrochlorate of cocaine, and perfect local anæsthesia resulted. Having to remove the corresponding tooth on the other side he injected the same quantity of cocaine, but no anæsthesia followed. He postponed the operation for a week and then repeated the injection, but without result. A second injection of 6 minims also failed, except in so far as a small patch of anæsthesia was found in the lip. No constitutional effects followed this treatment. He might mention that there had been an abscess at the root of the tooth previously to the injection.

Mr. Vincent Cotterell had since July last employed cocaine in sixty-eight cases, extracting under its use some hundred and fourteen teeth and stumps, and had not had one, what he considered, bad case. He had observed various symptoms which his experience had led him to attribulate to fear rather than to the effects of the drug. He believed many of the cases which had been related in which untoward symptoms had followed the injections of cocaine, should really be accounted for by his theory of fear. He usually employed a 10 per cent. aqueous solution of hydrochlorate of cocaine, injecting from 4 to 15 minims, according to the character of the tooth. Eighteen months ago he had to extract a lower wisdom tooth for a patient who told him her heart was bad, and that she had had a very severe affection of the heart some time previously. After the injection of cocaine this patient's breathing became very hampered, but upon her inhaling some nitrite of amyl she improved. He discovered subsequently that the patient suffered from angina pectoris. As a rule he found cocaine produced satisfactory local anæsthesia; in two cases in operating upon children he met with complaints of pain, but as children are prone to express emotions even when not really hurt, and as he had passed up his probe by the side of the teeth for a distance of from ¼ to ½ an inch without any expression of pain, he doubted whether any real pain was felt. He believed most of the so-called effects of cocaine were due to nervousness upon the part of the patient.

Dr. Maurice Davis said that the symptoms detailed by Mr. Stocken as having been revealed by him (Dr. Davis) were certainly not due to nervousness or fear. He added, in reply to a question from Mr. S. J. Hutchinson, that he would not subject himself to the risk of a repetition of his unpleasant experience. Mr. Hutchinson asked whether Dr. Davis had recently taken a meal, or was aware of any disturbing cause about the time of having the cocaine injected, and to this Dr. Davis replied that the cocaine was injected some while before a meal in either case. There was not any disturbing cause at work, and the alarming symptoms which supervened were a great surprise both to Mr. Stocken and himself. Anæsthesia was so far perfect that, although he distinctly felt the tooth extracted, he experienced no pain.

Mr. Ashley Gibbins inquired whether the solution used by Mr. Stocken was prepared freshly or some time previously.

Mr. Stocken replied that the solution had been made two days before it was used.

Mr. Boyd Wallis said that he thought if the crystalline products of the coca leaf were used for making the solutions rather than the amorphous forms, it was not a matter of such importance whether the solutions were made immediately or some time before injection, nevertheless he always made his solutions at the time they were required.

(*To be concluded.*)

THE DENTIST OF THE FUTURE.*

By Mr. Constant.

Mr. Chairman and Gentlemen,

It is my purpose this evening to follow to its natural conclusion the act of evolution which has transformed the barber of the seventeenth century into the dentist of to-day. What that conclusion is, and the means by which it is to be obtained I shall endeavour to show. The changes by which the present condition of dental development has been brought about are a matter of history, and interesting only in so far as they have tended towards the completion of the perfect dentist—for perfect, I trust, is to be the Dentist of the Future! Not, perhaps, perfection in its strictest sense, but perfection such as is recognised as obtainable by mortal man. This age, to use an original expression, is one of remarkable progress, and in the race for the goal it is now become in a greater degree than ever a case of the survival of the fittest. Such as in their folly endeavour to obstruct the course, clad in the rusty armour of obsolete practices, must inevitably be overthrown and trampled on. Individuals, trades, professions, the same laws of change and progress govern them all. To dentistry as a profession this applies in a superlative degree, and if it lags or falters it goes to the wall.

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* A Paper read before the Dental Students' Society, London School of Dental Surgery, Leicester Square.

Our profession is now at a most critical stage of its existence and a most impressionable one, and your influence upon its future can scarcely be over-estimated. Until quite recently the point at issue has been whether it should exist at all as a profession ; it now remains for you to decide what shall be its character and what its aims. The destinies of the dental profession will be affected by you in two ways,—by the influence of example, and the more direct influence of education ; and since the social status and professional capability of the Dentist of the Future will, to a great extent, depend upon the latter, it is of that I will speak more particularly to-night.

The value of the influence of education has been recognised and conceded on all hands, but it is a remarkable fact that although all are agreed on this point, on the more important one which naturally follows, viz.—what the education should be, all agree to differ. Writer after writer has given his views on the matter to the world, has promulgated his scheme of rules and laws, with much burning of the midnight oil and expenditure of ink and paper, and with the result that the seeker after truth, weary with endless journeyings through the mazes of conflicting ideas, dazed and deafened with the jumbling and jostling of utterly uncongruous conditions, is driven at length to the despairing conclusion that nothing has been satisfactorily demonstrated but a deplorable absence of unanimity of opinion.

The problem of dental education is, doubtless, a difficult one, and it is evident that in attempting to outline a scheme at once succinct and satisfactory, it is necessary to first clearly define its objects, yet, at the same time, care must be taken that the definition is sufficiently comprehensive to meet with general approval. I think, however, that, without fear of contradiction, I may safely enunciate the objects of education as applied to dentistry thus :—

(1) To provide that the student shall be a gentleman.
(2) To enable him to become a dentist.

The second, not as distinguished from the first, but in addition thereto. Broad as this definition may at first appear you will perceive that it is strictly limited by the terms "gentleman," and "dentist," and, since these terms are by some people applied with a liberality that we should consider reckless, it will be necessary to discuss their exact meaning.

First then, what is a gentleman?

Now most of our dictionaries state that he is "a man of birth," but I think that you will agree with me that this is incorrect, for a man of birth is not necessarily a gentleman, nor is a gentleman necessarily a man of birth. No! a man's right to be considered a gentleman depends not upon his birth nor even his moral or intellectual qualities, but upon his social pleasantness. Therefore I ask you to accept as the definition of a gentleman, "a man who is socially pleasant." In anticipation of objections to this definition which some of you are sure to raise, I may say that if a man, no matter how moral or how talented, were in the habit of blowing his nose without the assistance of a handkerchief, of misplacing the aspirate, or of committing other social sins of an equally grave character, he would never be accepted as a gentleman, while another, neither very moral nor clever, who is scrupulously careful not to offend against the canons of what is termed "good taste," would be universally admitted to have a just claim to the distinction that the term implies. By this I do not mean that in deciding if a man be a gentleman we do not take his moral and intellectual qualities into consideration at all, but I am sure that we value them, in this connection, only in so far as they contribute to his social pleasantness.

In passing to the consideration of the term "dentist," I must remind you that it is not the meaning of the term in its present, but in its future, application that we wish to arrive at. Moreover, since this is a practical paper written without pretence to literary merit or philological accuracy, with the object of exciting free discussion upon a matter of great importance, it will be better to state exactly the professional duties that the education of the Dentist of the Future is to enable him to fulfil, and the social and professional standing that we expect him to occupy, than to convey, in a brief definition, an indistinct impression of his position and duties. His professional duties may, I think, be stated thus:—

(1) To remedy the various diseases, injuries, and irregularities to which the teeth are liable.

(2) To remedy the loss of teeth by *efficient* substitution.

(3) To supplement, by his mechanical ingenuity and resources, the surgeon's skill in remedying the defects, diseases, and injuries of the mouth and jaws.

His social and professional standing should, undoubtedly, be as high as that of the physician and surgeon.

Having now clearly, I trust, defined the objects of education, as I understand them, we will pass to the consideration of the most likely method of their attainment.

General education is the key by which we obtain admission to the various storehouses of special knowledge, and if this key be imperfectly constructed or badly finished, the difficulties of access are correspondingly increased. It behoves us, therefore, if only for the purpose of facilitating his later studies, to ensure that the general education of the dental student should be as thorough as the limited time allowed for it will permit. Another reason is that not a few of the qualities that contribute to a man's social pleasantness are directly attributable to the influence of his general education; and I have stated that one of the main objects of education is that the dental student shall be a gentleman, in other words, "socially pleasant."

Now the Matriculation examination of the London University is one that a youth of average intellect should have no difficulty in passing at the age of sixteen. Although not by any means a severe examination, it has the reputation of being a very thorough one,--an important consideration, because the preliminary required by the Examining Board is not merely a test of the student's education, *but is its only criterion.* It is not very probable, however, while less difficult examinations are accepted, that the University of London will be largely patronised, but I trust that the day is not far distant when the Matriculation examination of that University will be *the* preliminary of the dental student.

We have now to consider his special training.

You probably noticed with regard to the heads under which I classified the duties of a dentist that the first referred to that division of dentistry that we term surgical, the second and third to that we term mechanical. Although I am perfectly aware that no fine line of distinction can be drawn between the two, I will, for convenience, deal with the subject of training under the heads "surgical" and "mechanical."

The present curriculum required of the dental student by the College of Surgeons of England, and particularly that part of it taken at the Dental hospital, is eminently calculated to enable him to competently fulfil his surgical duties. I consider, however, that the provision it makes for his mechanical training is far from perfect. It certainly ensures that he shall have received at least three years mechanical instruction under a qualified dentist, but I am sure that, in most cases at any rate, the amount of knowledge and skill thus obtainable is much less than he would, under a better system, be able,. in less time, to acquire.

"In what particulars is the present system wanting?" you naturally ask. I reply that it limits the practical knowledge obtainable by the student by allowing him facilities for learning only those methods of mechanical dentistry that happen to find favour with the dentist to whom he is articled. Thus the prejudices of the latter, however ill-founded, are unhesitatingly accepted by his pupil, to whom opportunities of judging for himself are, under the present system, denied. It may be said, in answer to this objection, that to learn one method properly is better than having a superficial knowledge of several. I doubt, however, that any method is properly taught, for the fundamental principle of the present system is based upon a misconception of what it is necessary that the student should learn. The essential feature of the mechanical training of the present day is the stress it puts upon the mastery of mere mechanical minutiæ to the utter neglect of the acquirement of artistic aptitude.

Thus it is that, in most cases, the student learns to consider, in endeavouring to remedy the loss of teeth, that if the denture he makes for the purpose be beautifully constructed (from a mechanic's point of view) and mastication and articulation are restored to the patient by its means, he has done all that can be expected of him, and the nearer the denture approaches mechanical perfection the more he plumes himself upon his professional capability. If, however, as seldom happens, the student's mechanical education has not succeeded in completely blunting his æsthetic faculties, and he recognises the necessity for a denture that will restore something more than the mere utilitarian functions of the teeth, but which his defective training has not placed within his power to produce, he abandons in despair the pursuit of a prosthetic art that would otherwise have found in him one of its ablest exponents.

But a still greater objection may be raised. The years of the dental student's pupilage are spent almost entirely in the workroom, and although he may thus gain much in manipulative dexterity it is at the expense of his mental developement. If the Dentist of the Future is to be merely a skilled mechanic, this consideration is of no importance, but if he is to be a professional man, and move in a social sphere in which mental culture is fully appreciated, he will, I think, review with regret that part of his life when his mind was left fallow, or only received such tillage as the rude husbandry of an uneducated mechanic could afford.

More I might say in favour of reform, were it not that I think I have already said sufficient. The fact that "the authorities" have not yet ventured to institute a definite examination in the mechanical department shows that even they have an inkling that there is "a fallacy somewhere" in the present system. The desirability of holding such an examination has, I know, been pointed out, but, if I may be allowed to hint to my professional pastors and masters, I should suggest that it would be a more common-sense proceeding to first ensure that the dental student should be properly educated, rather than to establish an examination that would only prove the inefficiency of his present training.

This naturally brings us to the question—'How is the student to be taught?' Now it is evident that to work out, in all its details, a scheme of education, however simple, would take a very long time—would, in fact, afford ample material for another paper—so I must, perforce, content myself with giving, in the barest outline, the method which seems to me the best.

In the first place I consider that a practical school of mechanical dentistry is required. This should be a charitable institution, established with the object of placing efficient dental aid within the reach of the humblest of our kind, who, at the present time, have no remedy for the many ills consequent upon the loss of teeth. Its staff should consist of lecturers and demonstrators of both the artistic and practical parts of mechanical dentistry, from whom, I think, the student would be more likely to obtain a perfect knowledge of the subject than from a mechanic, who is possibly harassed by the demands made upon his time by the exigences of a large practice. This arrangement, besides remedying the defects of the present system as regards the student's technical education, would, by bringing him into contact with his fellow-students, confer most of the benefits that we derive from social intercourse, and would round off those mental angularities that detract so much from the charms of budding manhood. But the chief advantage of such a system is the impulse it would give to mechanical dentistry. As nearly as I remember, the Dean, Mr. Morton Smale, when speaking at the dental dinner recently, remarked that the Odontological Society had done much to advance our profession, the British Dental Association had done, and is doing, much, and the L. D. S. also, but that the Dental Hospital of London had done more than any of them. So too, I claim, would a practical school of mechanical dentistry do much to raise the standard of that branch, for, just as the student at our Dental Hospital is brought into contact with the more eminent and skilled of his profession, so, at a school such as I suggest, he would be able to sit at the feet of the more able exponents of our mechanical art.

If a scheme of education such as I have outlined were adopted the student's career under favourable circumstances would be as follows :—

At the age of sixteen, being matriculated, he would join the mechanical school, and register as a dental student. After three years instruction there, he would enter at a dental hospital (this hospital of course !) and a general hospital, and register as a medical student. Two years later, at the age of twenty-one, he should take his L.D.S. diploma, and would then, I think, be fully qualified to fulfil the duties and maintain the position of the Dentist of the Future.

Although this practically concludes what I have to say upon the subject of dental education, there is an allied subject upon which I should like to add a few words.

There has lately been a fierce and, I regret to say, somewhat personal discussion as to whether it is desirable that a dentist should also hold a surgeon's qualification. The only objection that has been raised that has the least semblance of reason to recommend it, is that the student, in order to obtain his extra qualification, must neglect his dental work. I use the phrase " semblance of reason " advisedly, for I believe that the average of the dental work done by the students here who are working for the conjoint diploma is quite as high as the average of that done by the purely dental students. In further support of my opinion, I may point out that our Saunders scholar, and our energetic assistant house surgeon who obtained the operating prize, and from whose practical knowledge and skill many of you have doubtless benefited, both intend to take out "a licence to kill."

Since, then, nothing can reasonably be said against the L.D.S. taking the added qualification, let us see what can be adduced in favour of it.

I contend that it is the surest method of raising the status of the dental profession. To illustrate this, if you will pardon a parable, I will tell you a little tale in quite the orthodox manner ;—

Once upon a time there were two little boys named Barber, one was called Surgeon Barber and the other Dentist Barber. Now Surgeon Barber was a good boy, who always went to school, and got on so well with his lessons, that he grew up to be a very clever man. And all the people looked up to him and thought how learned and skilful he was, and he thought so too. But Dentist Barber was a bad boy, and "played the wag," and marbles, with other bad little boys. And so he grew up dirty and ignorant, and no one thought much of him. By this time Surgeon Barber had become so famous that he was ashamed to own Dentist Barber as his brother. When as years went past they both dropped the name Barber, people no longer remembered they were brothers, and Surgeon Barber, or Surgeon as he was then called, forgot it or wished to forget it, too. But in the course of time he saw that his brother was trying to reform, so he began to teach him. So well did Dentist Barber get on that people lost their bad opinion of him, but it will take them a very long time to forget how dirty and idle he used to be. So they will never think so much of him as they do of his brother Surgeon unless he clearly shows them that he is now quite as clever and useful. Besides, unless he does this, his brother will always look down upon him.

That, gentlemen, is the tale, bear well in mind the moral.

The honour the dentist who qualifies as a surgeon does his profession is insignificant, when compared with the benefit he himself receives. Besides the advantages which accompany the acquirement of knowledge of any description there are super-added, in this case, those that necessarily arise from his acquaintance with the principles of the healing art, in a special department of which it is his privilege to practice. Moreover, there is a very strong reason for a man receiving a wider education than that which merely enables him to practise, however competently, what has been aptly described as "a somewhat barren and engrossing speciality" a reason that is beautifully expressed in the following lines:—

> "Narrow
> The heart that loves, the brain that contemplates,
> The life that wears, the spirit that creates
> One object and one form, and builds thereby
> A sepulchre, for its eternity."

Before concluding, I should like to say a few words with regard to the influence of example, the value of which the past history of our profession well illustrates. Thus, is not our extensive literature, our social and scientific standing, yea! our very existence as a profession distinctly traceable to his untiring endeavours whose self-denying labours in our cause have earned for him the enviable title "the Father of the Profession," and of those other pioneers of progress whose portraits, with his, adorn our walls to-day? On the other hand, do not the advertisement columns of our daily papers, the periodical pamphlets (which injure our mother-tongue even more than they do our profession!) and those hideous cases full of grinning teeth, which almost as ably attest the artistic ability of the *soi-disant* dentist, as do his pamphlets prove the excellence of his education, do not these, I say, clearly show that the malign influence of the erst-while barber-dentist is apparent even now, and has yet to be destroyed.

Now, although it is not for everyone to be a Tomes, yet each of us, by adopting a high standard of professional ethics and striving to act up to it, can do much to raise the status of our profession.

Let me urge you, therefore, when worldly advancement or personal interests are placed in the balance against professional honour, to remember that

> "The purest treasure mortal times afford
> Is spotless reputation: that away,
> Men are but gilded loam or painted clay."

INTRODUCTORY ADDRESS.*

By LEOPOLD DRESCHFELD, L.D.S.

GENTLEMEN,

In taking the chair to-night, I beg to thank you sincerely for the kind support you have given me during the past year, and also for the honour you have done me in selecting me a second time as your president. It is an honour which I very much appreciate, but scarcely deserve, as I am only too conscious of my own short comings.

If I have accepted the honourable post again, it is not because I think that I am specially fitted for it, it is because I now know the duties are not onerous, and that with the support you have given me, and which I feel sure you will extend to me, the task will not be a difficult one.

For my shortcomings I must ask your indulgence, and of one thing you may be assured, that no one can feel more interest in the work done by this society or the good which is worked than I have.

Our society has now passed its first session, its first birthday, and I think we have every reason to be satisfied with the work so far accomplished. Our baby society has given signs of vigorous life, and we may justly hope that it will not only continue to live, but will thrive and become vigorous.

During the past session we have had four meetings, and on these occasions we have had papers of great merit covering the branches of Dental Science and art. Our numbers are yet but small, but this fault lies in the fact that our Dental School is so very young, and our students not very numerous. These shortcomings will, no doubt, be rectified, as we progress, and with an increase in the number of Dental Students the number of our members will steadily increase. All similar societies, even those which are now very successful, and can boast of a large number of members, have started in quite as humble a way as ourselves and if we only apply ourselves with zeal and industry to our task, and continue to look upon this society as a useful institution, and an additional aid in our studies, the good that will come out of our meetings, and our discussions will be very great indeed, and will amply repay us for the work and time we bestow on this society. I have no desire to detain you long, or to give you anything like an address, yet I cannot but express to you my opinion as to the great benefit which a society like ours must be to all students of dentistry.

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* Delivered before the Students' Society of the Victoria Dental Hospital, Manchester.

The science and art of dentistry is quickly asserting its place amongst the scientific pursuits, and the profession of dentistry is now on a much higher level than it was a few years ago. We are no longer mere mechanics, who, without any culture or much theoretical knowledge are simply satisfied with the exercise of a mere technical calling; we have learnt, and so has the public, that dentistry is a branch of medicine and surgery, and that without a thorough knowledge, both of the human anatomy and physiology and human pathology, we cannot pretend to practice our profession thoroughly and satisfactorily.

If this be so, if the science which underlies the practice of our profession is so intimately connected with medicine and surgery, then I think everyone will see that a society with the objects such as ours has in view, must do a great deal of good. We eagerly watch the progress of medicine and surgery, and appropriate to us much that this progress brings with it. I need only refer to some of the more recent discoveries, such as the different new anæsthetics, which have rapidly found their way into our consulting rooms, and which are used with the greatest advantage in our daily professional work. But it is not only the advances in therapeutics and the discovery of new remedies, which interest us, it is also the progress in other branches of medicine and surgery which find useful application with us. I need only remind you of the progress in pathology, the discovery of numerous micro-organisms, of which no less than twenty-four different kinds are found in the oral cavity, to show you how eagerly we must watch progress in all departments of medicine. We know now that micro-organisms play an important part in the production of some of the diseases of the teeth, and that attention to this point has to guide us in our endeavours, to preserve the teeth in a sound condition, and in our treatment of disease which has already appeared. Well, one of the objects, and, I may say a principal object, is to enable us to keep abreast with the progress of medical sciences.

The papers read before this society will often deal with new discoveries, with new appliances, and so forth, and besides the information which is thus brought home to you, you will probably also have the benefit of hearing the opinion of your seniors, who may have already tested the efficiency of these appliances, for in dentistry, as in medicine, a good deal is written, but not all that is new is good, nor is all that is discovered new.

Another, and equally important use of this Society is the social and immediate intercourse which you have with the experienced and older members of your profession ; the good which many associations such as the British Association, the British Medical Association, and our own Dental Association do, is due not only to the number of papers read, but also to the fact that it brings together men who follow the same calling, and who interchange ideas on the most varied subjects which come under their daily notice, while in the exercise of their profession. But in many other directions, such a Society as ours acts beneficially ; it stimulates you all to work, it exercises you in the art of discussion, it acts as a discipline of the mind, and forms an excellent means of mental training, and this surely must be beneficial, if we aim at being something more than mere empiricists, as mere dentists who work by the rule of thumb. A society like ours will stimulate, I hope, many to original work. A good deal of useful work can be done by correctly noting cases which come under our observation; by comparing cases with each other, and by analysing and sifting them.

A great deal of work is yet to be done in this, and other directions, and I hope that during this and the coming sessions, for I feel sure that this society will live and we may already see work which is due to the direct stimulus which this society exercises on its members.

CUT FROM the New York *Tribune*, April 7, 1887 : "The statue of Dr. Wells, who first used nitrous oxide gas as an anæsthetic, is to be placed on a fine new pedestal of granite at Hartford, Conn." It has stood on a wooden base for several years and during a storm of wind last summer, it being rotten, it tumbled to the ground.

British Journal of Dental Science,

LONDON, JANUARY, 1st 1888.

THE DENTIST'S HALF-HOUR.

At this time of year men's minds are perforce turned somewhat away from the every-day routine of life. Yuletide, that old-world festival, one of the proudest of the many set apart in Rome when men were bound to think of the gods and keep holidays, revived and purified by the early Christian Church, the Saturnalia comes down to our days as Christ-mass. The pantheism of Rome, which to the thoughtful overlaid the belief that all things were good and so could be deified in their abstract rightness, is now-a-days replaced by a faith that inculcates the love of neighbours rather than of self, and the contemplation of the happiness of our fellows before personal gratification. And as the whole contains the part we find in the section of society with which we are identified a similar set of obligations, and haply a similar desire to be at harmony with the rest of the world ; of course, our professional life is to the last degree trying alike to mind and body, straining the balance of the one, and taxing the resources of the other, but what would you ? Are other callings less arduous, are the righteous souls of lawyers, of statesmen, of soldiers or sailors not vexed within them ? Our salvation is we have plenty to do, and well it is so, for we have recently had painful experience what extravagant follies idle minds and unemployed hands will commit when leisure comes after a stirring and successful dental career. Well may busy men add a clause to their litany that idleness may be spared them. But dentists, if they avoid vacuity of life must secure leisure, the half-hours which our forefathers spent in the ingle nook, or around the fire in the baronial hall comes to us only by scheming and arrangement. Were we unwise enough to sell ourselves body and soul to practice, we might toil from morn till night and then the hardly earned fruits of success would too late tell us of our folly, and ashes replace the luscious flavours with which imagination had lent them. Half-hours of leisure for thought, for recreation and the cultivation of the human side of life are most urgently needed. Many busy men seek distraction but they find no rest. The earnest avocations of daily toil mean wear and tear of mind and body, and recuperation comes with the unstimulating repose of home-life rather than the excitement of travel. Half-hours set apart from life's workdays not only give existence a more rosy hue than that with which the sad followers of Schopenhauer are willing to invest it, but actually prolong the period during which healthy and useful work can be done.

We have purposely gone out of our beaten track and have closed our lips on Dental politics, although many pressing matters tempted us, and content ourselves with all good wishes for our readers' new year—the year of grace, 1888.

ANOTHER CHESTER PHILIPPIC.—We read with considerable regret a long wordy oration by Mr. Bullin intended as a reply to strictures which have appeared in the press about his address at the Chester Meeting of the Midlands Counties' Branch of the B.D.A. His present diatribe may fairly be summed up as *de omnibus rebus* with a dash of poetry. Mr. Bullin undertook a criticism of the B. D. A.'s affairs and made a pretty strong case, indeed had he steered clear of rodomontade and personalities, with a good deal of extravagant laudation of the L.D.S.'s at the expense of the M.R.C.S.'s, he would have enlisted widespread sympathy. He has now unwisely enough retired from his strong position and given way to a querulous garrulity which can only make himself ridiculous and damage the cause he seeks to promote. No wise man objects to criticism, as he knows that the truth will hold its own; it is the inexperienced free-lance who, riding atilt against windmills and suchlike semi-solid structures, expresses maudlin passion when he finds himself placed upon the flat of his back in obedience to that inexorable law that every action has an equal and an opposite reaction. Mr. Bullin, if he has really at heart the desire to make dentistry for the L.D.S.'s only, must show that he possesses common sense and common courtesy besides the rarer and higher professional virtues to which he has laid claim. The village oracle is apt to have his words treated with scant consideration when he migrates to a region whose horizon is less narrow than that bounding the confines of his rural home.

We have been obliged to defer until the present issue much matter which should have been before our readers in our last issue, but we have such pressure upon our columns that the delay was inevitable.

To Correspondents.—We are still constantly receiving anonymous communications; these are often interesting, but, of course, are useless. Will our readers remember to drop in their cards—not necessarily for publication—to enable us to see that the facts stated are genuine. Unless this is done, we cannot use the information communicated.

The Business Committee of the B.D.A.—Mr. Leonard Matheson, L.D.S., of London, has been appointed to serve on this committee.

Manicure.—Chilblains are unpleasant bedfellows, and they are not picturesque, especially upon the hands of a dentist. ' We recommend the following:

Ol. Rosæ	gtt. xv.
Glycerini	ʒj.
Spirit. myrciæ	f℥iij.
Ol. cajeputi	gtt. xx.

M. Sig.—To be used on the hands every night before going to bed, and in cold weather to be applied before going out into the open air, the hands being washed and dried.

Abstracts of Foreign & British Journals.

THE DENTAL REVIEW.

SOME POINTS IN OPERATIVE DENTISTRY.

By J. D. Moody, D.D.S., Mendota.

The cervical border is the most vulnerable point in all cavities. It is very inaccessible in approximal fillings on the mesial surface, where the adjoining tooth has been lost, it is usually as good as any part of the tooth. Hence two grave dangers are ever present--not finishing the cervical borders perfectly, and chipping or crushing the edge. These faults are common. A cross section of a bicuspid tooth at the line of the gum has approximately a figure of 8 appearance. To trim properly a filling in that little depression requires patience and great delicacy of touch. Failures at the cervico-buccal or cervico-lingual corner are due to depending too much on a groove at these corners for the retention of the filling. Towards the cervical border the blow is direct, while towards the corners it is apt to be a sliding motion *down* the side of the cavity, instead of *against* the side. Without free access a defective point in the filling will occur at these corners. A perfect filling requires the edges of the cavity under the gold to be solid. Over-malleting on cohesive gold is injurious and especially at these points. A tap on a tooth at right angles to its axis will cause a certain amount of pain, while a much harder blow in the direction of the axis will not. The filling must form a cushion to break the force of the blow, yet when in place must be comparatively solid and perfectly adapted to the walls of the cavity. Soft gold, or tin and gold is therefore, preferable. Lay a cushion of cohesive gold, at the cervical wall, tap it with the mallet. Every blow afterwards is but pounding his unyielding mass with a crushing force against friable material. This varies in degree in accordance with the density of tooth structure, and the success or failure of the filling varies in like manner. Hand pressure will largely overcome this difficulty. A slow hand pressure, using foot pluggers and cohesive gold, at this point will generally produce better results than when the mallet is used from the beginning of the filling. After the first blow, rendering the pellet of gold harsh, the impact of the plugger is transmitted through the thin layer of metal to the tooth substance with but little loss of force, thus endangering the integrity of the wall of the cavity. A layer of softer metal such as tin will not transmit this force so readily. The use of properly constructed matrices assists, but the writer's experience of them is unfavourable. With plenty of space a perfect cervical border can be made. This can be obtained even in a crowded arch, by using rubber, tape, or wedge ; cotton introduced and changed daily soon increases this space. A better way, where large cavities exist, is to excavate and fill the cavity and space with base plate gutta percha, leaving it full enough for the occluding tooth to crowd upon it. In a few weeks the teeth will be found to be well separated, the gum crowded away from the cervical wall, and no soreness existing. No thin edges should be left at the cervical border. Round the edges with a fine stone cut bur. Cut the cervical border low enough. Better build on sound dentine far beneath the gum than against frail material higher up. Decay seldom recurs at that point. Crowd the gum away, fill solidly, finish perfectly, wash all debris from the pocket under the gum. Soft gold is preferable to cohesive gold in these cases ; however, good work with cohesive gold can be done in such positions, by using hand pressure and finely serratod foot pluggers. The gold can be packed with them solidly to the margins of the cavity without any of that crushing of tooth substance so common when the mallet is used. When using hand pressure in such cases the gold should be cut up into small, flat pieces. After filling in this way to above the gum margin, the mallet will expediate the process. A combination of tin and gold at the cervical margin answers very well. It is best prepared in the following manner: Lay a half sheet of No 4 soft gold on a half sheet of No. 4 tin. Fold over into narrow strips, or better yet, roll in a napkin loosely, then cut into required lengths. Its merit is rather as a matrix for the gold than any supposed antiseptic or therapeutic qualities. Tin alone becomes darker, is more apt to wear away or disintegrate than is tin and gold combined. The surface will assume a harsh, gritty character, very much like a soft amalgam filling. By increasing the proportion of gold you can increase the hardness to any desired degree. Tin and gold can not be annealed, neither can it be worked with foot pluggers as can gold. Deeply serrated, broad and thin pluggers are the best. The pieces are forced into each other by the sharp plugger, and these commingled points are further interlocked by the subsequent malleting. In a case which will admit of it this filling material can be built up into a solid mass, but as a rule this is neither desirable nor admissable. For a cavity that is much below the gum the the best plan is to fill to the desired extent with tin and gold, mallet hard, finish off finally, then complete with gold. Gold can with care be easily built into the tin and gold. Lay a thin pellet of foil on the tin, hold one end down with an instrument, and beginning at the other end, with a deeply serrated plugger drive it into the tin. Annealed gold will readily unite with this layer. Tin will lie in place better even than soft gold. It will not curl up under the presssre of the instrument as much as gold, and being so soft is easily worked. By reason of these qualities tin and gold can be worked more rapidly than can gold alone. Its wearing qualities when in a crown cavity are nearly equal to gold. As a rule it is better than amalgam. It seems to be especially fitted for use in soft, chalky teeth, and the teeth of children.

THE IMMEDIATE FILLING OF PULPLESS TEETH.

By Louis Ottofy, D.D.S., Chicago, Ill.

The writer prefers to deal only with cases of teeth which are provided with blind abscesses, or whose periosteum is acutely inflamed, and which it has been customary to treat from two to six times prior to introducing the root-filling. The subject selected for this operation—which has been termed heroic treatment—should be (as in all cases necessitating rapid tissue reproduction, or rapid transformation from pathological conditions), healthy, robust, and usually young and active. Any tooth is a proper one for the operation, but free access tq all roots should first be obtained, for thorough cleanliness and dryness are all important factors. The rubber-dam should be adjusted, the *debris* entirely removed from the cavity before any attempt is made to enter the pulp-chamber, the root canals, once opened, should never be bored or reamed, nor should any attempt be made to enlarge them ; but instead a good supply of very fine piano-wire instruments should be provided. First saturating the entire tooth and cavity with a solution of bichloride of mercury (1 in 1000) ; then cleanse the canals with cotton wound on broaches and dipped in chloroform or ether until the cotton is returned odourless and almost colourless. After thorough cleaning,a solution of bichloride of mercury (1 in 250) is introduced into the root, but not forced beyond the apex, this having been allowed to remain two or three minutes, it is completely removed, and a weaker solution (1 in 1000) is forced into the root and beyond the apex ; the root canal is then thoroughly dried, and peroxide of hydrogen is allowed to take its place ; this, also, should be pumped with a piston-shaped piece of cotton into every available space within the root and beyond it. If any pus is present, and its presence is indicated by the peroxide of hydrogen, the bichloride of mercury (1 in 1000) should again be used ; but if no pus is present, its use may be dispensed with. The root-canals are now carefully dried with hot-air, they are then again medicated by winding cotton on a broach, moistening it with eucalyptol, and dipping it into iodoform ; this is forced into the roots very thoroughly ; while in this condition, the gutta percha dissolved in chloroform is introduced, in the usual manner. Instead of the gutta percha cones, he uses cones of oxyphosphate of zinc, and forces them into the canals in a semi-hardened condition (either may be used), and acting as a piston, the soft gutta percha is forced by the cone, thoroughly driving it into every space, irrespective of the fact of its passing through the apex of the root. A filling of gold (if not too large a cavity) may be immediately proceeded with. Any of the plastics may, almost invariably, be introduced at once. The application of a counter-irritant to the gums in then used, *e.g.*, a mixture of equal parts of tincture of iodine and tincture of aconite root, or an iodine paint, the tissue being thoroughly dried. The patient should return within 24 hours in case of trouble. As a general rule, inflammation, sometimes quite severe, of three or four hours' duration, will follow the treatment. The following precautions should be observed, *invariably :* 1st. Do not select patients, of lymphatic, anemic, or otherwise sluggish constitutions, but robust, healthy persons. 2nd. Use only pure and reliable remedies. 3rd. Perform each step *very thoroughly* before going on to the next. It requires from ½ to 1½ hours to complete one operation.

INDEPENDENT PRACTITIONER.

CAUSES AND TREATMENT OF DENTAL CARIES

By Geo. P. Rishel, D.D.S., Hornellsville, N.Y.

Read before the Joint Meeting of the Sixth, Seventh and Eighth District Dental Societies at Buffalo, October, 1887.

The fóod habit, the writer believes, is one of the least of the many influences affecting the dental organs.

Magitôt investigating the frequency of caries in the eighty-six military departments of France, during 13 years from 1837 to1 849 says: We have already remarked upon the influence of raçe in the question which occupies us, and it seems evident that we must have recourse to considerations of *this nature* to explain the prevalance of caries in particular regions.

Next in importance, and to a certain extent growing out of the peculiarities of race-development, is that of temperament. Under its influence the trifacial—the nutrient nerve of the teeth—performs its functions. Under its influence the different varieties of tooth-structure are formed, and by reason of its influence may be seen the various conditions usually described as hard and soft decay, or black, yellow and white caries, and generally supposed to be a result of effects produced by different kinds of acids.

Mal-nutrition, is the principal cause of defective tooth-structure. Depressing systemic influences, resulting from nervous irritability, and produced by high living, over-stimulation, are destroying not only the teeth, but the lives of the present generation.

Patients of the nervous or lymphatic temperament suffer first and most.

It is well known. that during periods of sickness of a special debilitating character, those portions of the body possessing a low grade of vitality, as the teeth and hair, suffer most, and but very slowly partake of the reparative process, and not until the general system is far advanced in the way of improvement.

Caries is, therefore, primarily and to a large extent the result of imperfect assimilation, lowered vitality and defective tooth-structure, modified and controlled by nervous influences, and to chemical disintegration, modified and aided by micro-organisms, some of which have the power to produce acid fermentation.

Dr. W. D. Miller, of Berlin, says: "The first stage of caries of the teeth, *i.e.*, the extraction of the lime-salts, is, for the most part, caused by acids which are generated in the mouth by fermentation. Decalcification of the enamel signifies total destruction of that tissue; of the dentine there remains, after decalcification, a tough, spongy mass, which becomes subject to the invasion of enormous numbers of fungi (leptothrix threads, bacilli, micrococci, etc)."

The fungi produce anatomical and pathological changes in the deep layers, stop up the canaliculi, and necessarily lead, sooner or later, to the death of the dentinal fibrils. The outer layers of dentine, thereby deprived of nourishment, die, and fall a prey to putrefactive agents.

Caries of the teeth may be considered as consisting of three stages: (1) decalcification, (2) infection and devitalization of the decalcified dentine, (3) putrefaction of the devitalized dentine, though it would not be easy to say just where one stage ceases and the other begins.

The influences of race, temperament and habits of life, are beyond our control, but the *knowledge* of these influences will often aid us in treatment. The conditions of the dental organs, *e.g.* loss of tooth-structure, frail walls and a tendency to inflammatory conditions, as in a nervo-lymphatic temperament suggests plastic fillings and the employment of means for lessening the effects of thermal changes. So grade of pulpitis, which in the one instance may be readily pronounced incurable and calls for immediate extirpation, may in the other be just as surely saved.

The first step in the proper treatment of dental caries consists of such persistent and intelligent use of floss silk, tooth powder and brush, also the daily employment of a mouth-wash which will secure a more or less complete sterilization of the mouth. Listerine is very useful. Dr. Miller recommends.

R	Thymol,	gr. iv.
	Acid. benzoic.	gr. xxxxv.
	Tr. eucalypt.	ʒ iii ss.
	Aquæ	Fl. ℥ xxv.

Local treatment consists in application of the rubber dam cutting away of frail and ragged margins, and the removal of portions of decalcified dentine which are removable painlessly. If sensitive, make an application of Naboli No. 2, allowing it to remain about five minutes, wipe out the cavity and apply No. 3 for six or seven minutes, and remove all traces of No. 3 by using No 4 absolute alcohol, or chloroform. After using the hot air syringe the final work of preparing the cavity causes will be almost painless. It should now be saturated with carbolic acid, dried, and again saturated with a solution of copal in ether, the margins polished, and the filling inserted.

The employment of Naboli as a pain obtunder is based upon scientific principles, and failure can only be due to improper methods. No. 3 is composed of glycerine, tannic acid and a minute quantity of chloral.

Reports of Societies.

STUDENTS' SOCIETY. THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, Held Dec. 12th, 1887.
HERBERT WILLIAMS, ESQ., *Treasurer*, in the Chair.

THE minutes of the previous meeting were read and confirmed.

Messrs. J. Dunlop and E. Parsons having signed the Obligation Book were formally admitted to membership by the Chairman.

The following gentlemen were then balloted for and elected members of the Society :——Messrs. J. Turner, Irwin Street, A. W. W. Hoffman, S. C. Bright, R. W. Dickinson, H. Welham, J. B. Hordern, G. N. Moseley, H. G. Harper, H. Pedler, and E. J. Appleton, F. E. Davar, A. V. Knowles, E. Preedy and J. H. Day.

Mr. C. J. Cowell was proposed for membership by Mr. Seymour, seconded by Mr. Constant.

Messrs. Bates and Porter were elected Auditors of the Treasurer's account.

On Casual Communications being called, Mr. Badcock presented to the Society a tooth, said to be a permanent molar, the roots of which embraced the partially developed crown of a bicuspid which had been brought away with it.

Messrs. Wood and Robbins expressed doubts as to its being a permanent molar, and asked for further details of the case.

Mr. Cohen presented a model showing extensive necrosis of the right superior maxilla causing an opening into the antrum and due to syphilis. An artificial plate had been made to cover over the opening into the antrum.

The chairman then called on Mr. Constant for his paper entitled "The Dentist of the Future.

In the discussion which followed, Mr. Bates criticised Mr. Constant's definition of a gentleman, and defended the present system of Mechanical Training.

Mr. E. Lloyd Williams while admitting the need of more extended practical instruction in Mechanical Dentistry at the Hospital, spoke of the difficulties underlying the adoption of such a scheme as that proposed by the reader of the paper.

Mr. Colyer disagreed with the reader as to the standard for the preliminary examination and also as to the advisability of trying to work the L. D. S. and M. R. C. S. together. He also expressed the hope that the dentist of the future would be more essentially a Gold Filler.

Mr. Rilot defended the present system of individual mechanical training, especially when combined with a certain amount of mental training as allowed by the present Curriculum. He also pointed out the advantage of taking the comparatively harder Preliminary Examination of the London University, inasmuch as it clears the way for the higher Examinations in Arts or Medicine, should the student feel inclined at any future time to pursue these studies further.

Mr. Seymour said that he thought all students should if possible take up the double qualification (L.R.C.P., M.R.C.S.) in addition to the L.D.S. He was pleased to see that the students at Leicester Square not only took prizes at the Dental, but also carried them off at their general Hospitals.

Mr. Robbins also upheld the present method of doing three years' mechanical work before commencing Operative Dentistry, and spoke of the advantages of obtaining the two diplomas when practicable.

Mr. Rouw predicted and looked forward to the time when every Dental Surgeon would also be a qualified medical man, and spoke of the extended view the study of general surgery enabled us to take of our own speciality.

Messrs. Harsant, Cohen, Wood, and Badcock also contributed to the discussion.

Mr. Constant then replied at some length to the various speakers.

The Chairman then accorded the thanks of the Society to Mr. Constant for his careful and thoughtful paper, and to Messrs. Badcock and Cohen for their Casual Communications; he then announced that the next Meeting would take place on Monday, January 16th, when Mr. J. H. Badcock would read a paper entitled "The Dentistry of the Past."

The Meeting was then adjourned.

STUDENTS' SOCIETY OF THE VICTORIA DENTAL HOSPITAL.

The First Meeting of the above Society was held at the Victoria Dental Hospital, on Tuesday, Nov. 29th, 1887. Leopold Dreschfeld, Esq., L.D.S., President, in the chair.

The following gentlemen were proposed as members by Mr. E. Latham, and seconded by Mr. C. H. Small:—Messrs. A. Sutliffe, W. A. Hooton, H. A. Forsyth, H. S. Planck, and A. H. Derwent.

The President then delivered a highly interesting and instructive inaugural address.

A vote of thanks, proposed by Mr. F. Nathan, and seconded by Mr. C. H. Buckley, terminated the proceedings.

Dental News.

GENERAL MEDICAL COUNCIL.

November 21st.

Mr. **Marshall**, President, in the chair.

Dental Business.

The following communications were received from the Royal College of Surgeons in Ireland, and from the British Dental Association:—

(*a*) From the **Royal College of Surgeons in Ireland**:—

Royal College of Surgeons in Ireland,
Dublin, *November* 12, 1877.

Dear Sir,—I am directed by the President and Council of this College to submit for the consideration of the General Medical Council the conduct of Mr. H. F. Partridge, a former Licentiate in Dentistry of this College, who, having entered into a written undertaking, before his admission to examination for the Licence, "not to seek to attract business by advertising or by any other practice considered by the College to be unbecoming," persistently violated that undertaking, notwithstanding his being called upon by the College to desist therefrom. I am to remind you that, by reason of this violation of his undertaking, and of the Ordinance of the Council referring thereto, the College withdrew his Diploma and required him to surrender the same, and notified their having done so to the General Medical Council (*Minutes* of Dental Committee, pp. 223 and 225); notwithstanding which, he has since continued to append to his name the letters indicating that he is a Licentiate in Dentistry of the College.

I am directed to submit these facts—of which I am prepared to submit the necessary proofs for information of your Council—for their consideration, and to request that they will, under authority of Clause 13 of the *Dentist Act*—proceed to "cause enquiry to be made" whether the said H. F. Partridge has been "guilty of any infamous or disgraceful conduct in a professional respect," and—if they shall be of opinion that he is so guilty—will "cause his name to be erased from the *Register*" as therein printed.

I am, Sir, yours very truly,
ARCHIBALD H. JACOB, F.R.C.S.I.
Secretary of the Council.

W. J. C. Miller, Esq.,
Registrar of the General Medical Council.

(*b*) From the **British Dental Association**:

40, Leicester Square,
London, W.C.
November 21, 1887.

I am requested by the Business Committee of the British Dental Association to express to you their earnest hope that the Medical Council may see their way to the removal of Mr. Partridge from the *Dentists' Register*.

Whilst they do not presume to offer any suggestion as to the course to be adopted by the Council, for that is a matter which must rest entirely in their own hands, and although they would greatly regret that the Council should enter upon any litigation of doubtful issue ; on the other hand, they feel that the removal of the name if possible would be in accord with the spirit of the *Dentist, Act.*

After careful enquiry, the Committee are of opinion that Mr. Partridge is not deserving of the smallest consideration beyond his legal rights, and they would further venture to call your attention to the following circular, in which he foreshadows the method in which he will endeavour to render nugatory the previous action of the Irish College and of the Medical Council, and at the same time indicates the manner in which his practice is to be conducted and maintained.

I remain, gentlemen, your obedient servant,
MORTON SMALE, M.R.C.S., L.D.S.,
Hon. Sec. B.D.A.

To the General Medical Council.

Mr. Macnamara:—What is the object of mentioning this case now? I thought that the matter was to be deferred till Thursday.

The Registrar: The object is to set the Council in motion by some communications. The next step will be for the Council, if it sees fit, that the communications be referred to the Dental Committee, who are summoned for to-morrow to consider the case.

Sir W. Turner : I move that the case of Mr. Partridge be referred to the Dental Committee for inquiry and report.

Mr. Macnamara : I second the motion.

Mr. McVail : When was this gentleman registered? His name does not appear in the Dentists' Register for this year.

The Registrar : His name was removed last year. The Register was printed in January. Since that time, by mandamus from the Queen's Bench, he has been restored to the manuscript register, but, of course, there has been no time to put it in the printed register.

The motion was agreed to.

Friday, November 25th.

Mr. Marshall, President, in the chair.

The case of Mr. Francis Partridge was dealt with by the Council.

Mr. Wheelhouse moved that the report from the Dental Committee in regard to this case be received and entered on the minutes.

Dr. Matthews Duncan seconded the motion, which was agreed to.

The Registrar stated that Mr. Henry Francis Partridge had been summoned to appear before the Council on that day at two o'clock, but he did not appear either by himself or by representative

Mr. Farrar (Solicitor to the Council), said that Mr. Henry Francis Partridge was registered as Licentiate Dental Surgeon, Royal College of Surgeons, Ireland, in 1878, and was placed on the register on the 20th of December in that year. On the 4th of July, 1885, the Council received a letter from the Royal College of Surgeons of Ireland, to state that they had withdrawn their licence attached to Mr. Partridge's diploma. A letter dated July 4th, 1885, was addressed by the Secretary and the Council of the Royal College of Surgeons to the Registrar of the General Medical Council, and at a meeting of the Executive Committee on the 10th of July, 1885, the Registrar was instructed to make application to the Royal College for information as to the cause of withdrawal of the diploma. The reply was given that it was for advertising in violation of the undertaking that Mr. Partridge had given to the College that he would not advertise or do any other act which the College thought objectionable. On the 2nd of June, 1886, the Council directed the erasure of Mr. Partridge's qualification, and subsequently, as that was the only reason for his being on the register of qualified practitioners, his name was also directed to be erased therefrom. There was an undoubted power in that Council, under the Medical Act of 1878, to withdraw names from the Medical Register where all the qualifications had been taken away, but, unfortunately, this by some oversight was not repeated in the Dentist Act. Mr. Partridge subsequently applied for a mandamus to restore him to the register, and this mandamus was granted on the 15th of June last, on the ground that his case had not been decided on the merits, the wording of the Dentists' Act requiring that the Council should decide on the merits of each particular case. On the 1st of August this position was affirmed on appeal, and here he should like to read a passage from Lord Esher's judgment, than whom no more acute and capable judge was on the bench. He said, after stating what he thought to be the powers of the Council under the Dentists' Act: "I should not be satisfied to give this judgment, looking at those powers, if I did not state that in my opinion it is clear that although the mere fact of a person having broken that which he undertook to do with his local authority, and having been in consequence struck off their register, does not entitle anybody to strike him off this register without enquiry, yet these facts bring it within the jurisdiction of the General Council, and if they think that this is disgraceful conduct, or if they come to an opinion that what he has done is disgraceful in his professional capacity, and I should say myself that a deliberate and persistent breach of this obligation would be disgraceful conduct upon which they might come to the conclusion that he had been guilty of disgraceful conduct, then after hearing him, I presume the Council are judicial, and after giving him the opportunity of being heard before the Committee of General Council for that breach which they think was done in a disgraceful way, they may erase him from the Registor." Lord Esher, therefore, not only suggested, but encouraged and almost called upon the Council to consider the case on its merits. In accordance with that view a summons was sent to Mr. Partridge, dated November 3rd 1887, stating that it had been alleged to the Council that he was liable to have his name erased from the Dentists' Register under and pursuant to Section 13 of the Dentists' Act, 1878, on the gronnd that he had been guilty of disgraceful conduct in a professional respect. The matters alleged against him were that he had constantly and habitually attracted business by advertising, and had, therefore, wilfully violated the declaration made, and subscribed by him in the year 1877, whereby he declared that he, so long as he held a diploma in dental surgery at the Royal College of Surgeons in Ireland would not attract business by advertising or any other unbecoming practice. It stated that the facts of the case alleged against him would be ascertained by a committee of the General Council appointed under Section 15 of the Dentist Act, which was to meet on the 23rd of November, and invited him to transmit in writing any answer or defence that he might desire to submit or urge in reference to the matters alleged against him, and also to attend before the Committee to establish any facts that he might think fit to submit on the said inquiry. In answer to this, Mr. Partridge replied by a letter of the 18th of November, in which he stated that he was in receipt of Mr. Farrar's communication concerning the meeting of the Committee of the General Medical Council of the 23rd, to discuss the question removing his name and qualifications from the Dentists' Register on the ground of his having, by systematic advertising, violated his agreement with the Royal College of Surgeons, Ireland, and that, although his health was not very strong, still if his presence was esteemed necessary, he would endeavour to attend out of respect for the Medical Council. With regard to his defence, the lines thereof might be found in previous letters written by him, but he would bring under their notice the following points in explanation of his having violated his undertaking with the Royal College of Surgeons, Ireland. At the time of signing the arbitrary contract imposed upon him, viz., not to advertise, he did not anticipate being visited with blindness, neither did he think that any objection would have been taken to his advertising his institution on precisely the same principles that medical men organize self-supporting homes, &c. He did not consider that what he had done was in any way dishonest advertising. He stated that since his name had been removed from the register he had advertised more extensively, but he should very much like to see the advertisements and the matter thereof which constituted disgraceful advertising, and which caused the Royal College of Surgeons, Ireland, to remove his name from the register. If the system of advertising was to be stopped it should be done *in toto*. He said that he was at a loss to understand the object of the present inquiry, having thought that the question had been finally settled and his obligation fulfilled by his returning the diploma, which he did immediately upon his exact professional position being defined by the decision of the Court in his favour. He had not returned it previously because no precise time was stipulated as to when the diploma was to be cancelled and he could not see how the Council could have expected him to return it earlier. He further stated that he was not altogether pleased with the present compilation of the Dentists' Register, the same not being a reliable book of reference, and containing the names of many practitioners who advertised, and whose names should have been erased as his had been. He added that it was his further conviction that when the judges made the comments they did, they were under the impression that the Dentists' Register contained only the names of those of unspotted respectability, and that all advertisers were rigidly excluded. He deeply regretted having violated his undertaking, but no other course was open to him. Having been in the profession for nearly a quarter of a century, long before the Act of Parliament or the register was ever dreamt of, the opinion to which he was subjected was, he considered, extremely arbitrary, amounting he need not say to persecution. Granting that he had acted wrongly, surely a man of his long standing was not to be visited with so heavy a penalty as total extinction.

Other documents were also laid before the Council by Mr. Partridge, and were read by the Solicitor.

Mr. Farrer then stated that although Mr. Partridge had ridden off on the ground of advertising, it was not a question for the consideration of the Council that he had advertised. What was for their consideration was whether he behaved disgracefully in violating the undertaking which he had given to the Royal College of Surgeons, Ireland. The case was referred by the Medical Council to the Dental Committee to find out the facts. Their report was conclusive on the facts, and he now proposed to read it.

REPORT BY THE DENTAL COMMITTEE ON THE CASE OF HENRY FRANCIS PARTRIDGE.

Members.—The President, Sir Dyce Duckworth, Dr. Quain, Sir William Turner, and Dr. Aquilla Smith.

The Dental Committee having ascertained the facts relating to the case of Mr. Henry Francis Partridge, report as follows:—

1. The name of Henry Francis Partridge, with the qualification of Licentiate Dental Surgeon, Royal College of Surgeons, Ireland, 1878, was placed on the Dentists' Register on December 20th, 1878.

2. He did not claim registration, on account of his having been in practice before the passing of the Dentists' Act, and cannot now be registered as having been in practice at the passing of that Act.

3. On July 2nd, 1885, the Royal College of Surgeons in Ireland withdrew or cancelled the diploma granted by them to Partridge, and a letter dated July 4th, 1885, notifying

that fact, was addressed by the Secretary of the Council of the Royal College of Surgeons in Ireland, to the Registrar of the General Medical Council, and at a meeting of the Executive Committee on July 10th, 1885, it was resolved that the Registrar be directed to make application to the Royal College of Surgeons in Ireland for information as to the cause of withdrawal of the diploma.

4. The President and Council of the Royal College of Surgeons in Ireland withdrew or cancelled the diploma of Mr. Partridge because of his having, in violation of his undertaking given to that College, attracted business by advertising in connection with the Ladies' Dental Institution, South Kensington.

5. At a meeting of the General Medical Council held on June 2nd, 1886, it was decided:

(*a*) That the qualification of H. F. Partridge be erased from the Dentists' Register.

(*b*) That the name of the said H. F. Partridge be also erased from the Dentists' Register.

6. The Ordinances of the Royal College of Surgeons in Ireland forbid advertising, and Mr. Partridge, both before his admission to examination for his diploma in dental surgery, and again after passing his examination and before he obtained his diploma, signed a declaration that so long as he held such diploma he would not attract business by advertising or any other practice considered unbecoming by the College, and agreed that his diploma should be cancelled on it being proven that he had done so.

7. Mr. Partridge has broken such pledge by advertising whilst he was still holding the said diploma, and he did so after repeated warnings from the College. And, further, in answer to the first of such warnings, he apologized, and stated that he was willing to comply with the laws of the College.

8. On June 15th, 1887, the High Court of Justice, at the instance of Mr. Partridge, granted a mandamus to the General Medical Council to restore his name to the Register of Dentists.

9. On August 1st, 1887, on appeal by the General Medical Council, such decision was confirmed, and the mandamus directed to issue.

10. The name and qualification of Mr. Partridge have

been restored to the Dentists' Register pursuant to such mandamus.

11. Mr. Partridge still continues to advertise.

He would only add one word more. Lord Justice Lopes, in giving judgment in the Court of Appeal, said, "I would only add this, that if, when the case comes before the General Council, they come to the conclusion that he has wilfully and deliberately acted in violation of the undertaking which he gave when he was made a licentiate—I mean, has wilfully and deliberately attracted business by means of advertisements—I should think they would have very little hesitation in saying that was disgraceful conduct in a professional respect within the words used in section 13."

A Member of the Council asked whether they were to understand that it was impossible for a man to be on the register without a qualification.

Mr. Farrer said that was a point that had been discussed before, and it was extremely technical. It was argued in this case that once being on the register there was no power to take the name off, that the mere estreating of a qualification did not take the name off the register. In dealing with this case, Lord Justice Lindley said the question raised was one of very great importance, and more particularly was it important to the various authorities described in Section 2 as "Medical authorities," that was to say, the bodies and universities who chose members of the General Council. He added, "The effect of our decision unquestionably is this, that it renders it incompetent for a medical, simple by removing a licentiate from the register, to require him to be removed from the Dentists' Register until the Medical Council have come to the conclusion that he ought to be removed under the provisions of Section 13. In other words, the consequence of our decision will be that it will not be competent to the Medical Council without exercising their jurisdiction and discretion of the powers given to them to remove a person from the Dentists' Register simply because the licentiate has been struck off its list by the medical authority which puts him on." Lord Justice Lindley pointed out the curious anomaly of the case, that Mr. Partridge, at the moment of applying to be registered, had not a qualification which would have entitled him to be put on, but that, owing to the defective way in which the Act of 1878 was drawn, he had the to come and ask to be registered although he had not the qualification necessary to put him on the register. He said, "It would be a strange thing to say that any gentleman who, not being a licentiate, was not entitled to be registered, should be in a position to maintain that the Medical Council should put him on the register. The answer to that was to be found in the ambiguity of the expression "entitled to be registered" contained in Section 6; but when they came to Section 7, it was plainly confined to persons entitled to be put on that register in the first instance, and not to persons entitled to be kept there when they were on."

Strangers were then directed to retire, and the Council proceeded to deliberate upon the case.

On the re-admission of strangers, the President stated that the Council had arrived at the following decisions:

"(*a*) That, in the opinion of the Council, Henry Francis Partridge has committed the offence charged against him, that is to say, wilfully violated the declaration made and subscriben by him, whereby he declared that as long as he held the Diploma in Dental Surgery of the Royal College of Surgeons of Ireland, he would not attract business by advertising or any other unbecoming practice."

"(*b*) That the offence is, in the opinion of the Council, disgraceful conduct in a professional respect."

"(*c*) That the Registrar be directed to erase the name of Henry Francis Partridge from the Dentists' Register."

BIRMINGHAM DENTAL HOSPITAL.

The annual meeting of the Birmingham Dental Hospital was held, Dec. 2nd 1887, at the Council House. The Mayor (Mr M. Pollack) presided; and there were also present Colonel Phelps, Dr. Green, Dr. Simon, Dr. D. Vinrace, Councillor Brinsley, and Messrs. E. M. Pearson, J. Ansell, H. B. Neale, Adams Parker, K. Wilson, C. Sims, E. F. Booth, G. H. Payton, and W. A. Addinsell (hon. secretary). Mr. J. H. Chance wrote expressing regret at his inability to be present. —The Hon. Secretary read the report of the committee. They congratulated the governors upon the fact that the hospital had continued to grow in popularity, and each year relief was given to a larger number of patients. The number of cases treated during the year ended July 31, 1887, was 12,133, as compared with 10,704 in the previous twelve months. The operation; performed numbered 43,415, against 11,037 last year. Although during the last five years the patients had doubled in numbers, the means of support had increased very little. The subscription list for the past year actually showed a decrease. The greatest economy had been observed, and the average expenditure of the cases treated was only 6·4d. With a view to increasing the income, the committee had decided to adopt the system of registration, the fee being sixpence for each patient over ten years of age, children being admitted free. The committee were sanguine that this step would in no way impair the usefulnesss of the institution, but would enable it to carry on its work even more efficiently than in the past. In conclusion, the committee deeply regretted the death of Mr. E. H. Carter, and the resignation of Mr. E. M. Pearson from the office of treasurer.—Mr. Pearson presented the statement of accounts, from which it appeared the liabilities exceeded the available income by £83.—The Mayor, in moving the adoption of the report and statement of accounts, said it was one of the agreeable privileges attending the mayoralty to be associated with the charitable institutions of the town. It was pleasing to find that the Dental Hospital was so popular. The increase between last year and this in the cases treated was 1,429, or nearly 15 per cent. But the importance of the work might best be judged by comparing this year's returns with those of 1883—the former more than doubling the latter. Unfortunately the subscriptions were £20 less, and the donations £75 less. He trusted that the registration system would not militate against the work of the hospital, but rather that it would assist in instituting seven instead of four filling chairs. The institution ought to receive more attention and support from the public.—The resolution was seconded and agreed to.—Votes of thanks were passed to the hospital staff and to the officers. The Mayor was appointed president, the Hon. A. C. G. Calthorpe vice-president, Mr. Wilson, hon. treasurer, Mr. Addinsell, hon. secretary, and Mr. C. Sims, in recognition of his past services, was elected consulting dental surgeon.—On the motion of Mr. Turner, a vote of thanks was accorded to the Mayor, and the proceedings terminated.

Correspondence.

[The editor does not hold himself responsible for the opinions expressed by his correspondents.]

DENTAL ADVERTISING.

To the Editor of the "British Journal of Dental Science.

DEAR SIR,—I have read with much interest the correspondence re Dental Advertising in your Journal, and quite agree that if it be practicable something ought to be done to stamp out the Quackery and Swindling which is going on in our Profession—pray forgive the strong language—but if I shall not be trespassing too much on your valuable space, I will briefly relate two or three cases out of many which have recently come under my notice to prove that the expressions used are not too strong.

CASE I. A lady consulted an American Dentist—or at least, such he pleased to call himself—to know if any of her teeth required attention; he said a lower molar required filling and at once set about plugging (?) with gold, for which he charged a guinea. Shortly after reaching home the gold came out, and she called again next day complaining. He said, "the tooth had been properly filled, *but she had bitten much too hard upon it*, he would renew the filling for half fee, some more gold was used, 10/6 more paid; but, alas! before the patient reached home the filling again came out. She was very much annoyed, and consulted a respectable practitioner, who on very carefully examining her mouth pronounced all her teeth perfectly sound and discovered that our D.D.S. had simply wedged some gold between the crowns of two molars, for which clever operation he had charged 31/6.

CASE II. A lady consulted me a short time ago about a partial upper and lower denture on Vulcanite which were most uncomfortable, and for which she assured me she paid a dentist in town £50, a very fair price for same would have been about 7 or 8 guineas.

I need scarcely add that both the above are advertisers.

CASE III. A very poor woman in my neighbourhood saw advertised a set teeth for 70/-, she went and asked to have a set made, but the dentist told her at that price they were very poor teeth and he couldn't recommend them, but suggested she should have a set of his seven guinea teeth, which he told her were first class quality. She eventually agreed to give this sum, paying down the 70/-; an appointment was made for that day fortnight when the balance was paid, and the teeth placed in situ., and she went away, but not rejoicing, for in a very short time they gave so much pain she was compelled to take them out, after vainly trying to wear them for a week or more, went back, telling the dentist she could not wear them, he placed them in her mouth and acknowledged that they really did require some alteration but that the fee would be two guineas more. Is further comment necessary?

Some time ago I suggested to the secretary of the B. D. A. the wisdom of in some way warning the public against such black mailing; his reply was—"How are we to do it? the daily papers would not insert an advertisement which would be injurious to their own interests, and such a notice evidently would."

Now the question still remains,—how is it to be done? I feel certain that a handsome sum could be raised for the purpose, and would suggest that by means of pamphlets widely circulated the public might be educated to the fact that *no respectable dentist advertises, and those who do are not recognized by the profession*, and thus the great evil would be blotted out, and each one stand on his own merit. I would gladly give my guinea, or more if needed, for this or any better method and feel sure that every non-advertiser would do the same. I think the B. D. A. as an authorative body could best undertake the matter.

In conclusion I would point out that those practising in the poorer neighbourhoods are those most affected. In my own district I have an English Licentiate (a near neighbour) who advertises in very large type in our Local weekly, styling himself L.R.C.S., Engd., an American D.D.S. (who by the bye is not on the Register), but evades the jaw by calling himself Dr. ———, Dental Specialist,—besides these, a shoal of smaller fry, who are constantly circulating handbills, pamphlets, &c., and only the other day my son went into a neighbouring chemist's, and was presented with a very gaudy pamphlet emanating from the region of Great Russell Street, and accompanying it a notice that chemists would be allowed 25 per cent. on all fees from patients introduced by them, and I have good reason to believe that the medical profession have been similarly insulted.

I enclose my card.

I am, dear sir, yours faithfully,
AN IRISH LICENTIATE.

[We are requested to publish the following correspondence.]

DENTISTS AND CORONERS JURIES.

(Copy.)

London, November 25th, 1887.

Dear Sir,—On the 14th inst., my assistant, Mr. Edwin Hancock, a registered Dentist, was summoned on the Jury of the Court over which you so ably preside. He informs me he told you he was exempt from serving under the provisions of the Dentists' Act, clause 30; that you still demanded his services notwithstanding; and further, that you informed him the said clause did not exempt him from a Coroner's Court. I have this day been to the Medical Council office to have their opinion, which is averse to your own. It is rather hard upon Mr. Hancock, who is a man in needy circumstances, with a large family, that he should be compelled to lose his day's pay, viz., 10/6, through your presumed non-acquaintance with the Law on the subject. I think the least you can do in the matter is to pay Mr. Hancock the 10/6 he has lost.

I beg to enclose you an extract from the before-named Act of Parliament.

Awaiting your reply,

I am, dear sir, faithfully yours,
V. C. MALLAN.

P.S. This is written without prejudicing any right of claim Mr. Hancock may have.

Coroner's Office,
68 St. Mary's Terrace, Paddington, W.,
December 1st, 1887.

Sir,—I am directed by H. M. Coroner to acknowledge the receipt of your letter of the 25th ulto.

He considers it hardly polite, and should not have replied but that he wishes you, if possible, to understand the law relating to Coroners' Juries.

He is quite familiar with the printed quotation you enclose, but there is the exception which proves the rule.

All inquests held by the Coroner in virtue of his office, are expressly excepted from the County Juries Act, 1825 (6 Geo. 4, c. 50). Section 52 of that Act, empowering Coroners to take and make all inquests and inquiries by Juries of the same description as they have been used and accustomed to do before the passing of that Act. By the Juries' Act, 1870 (33 & 34 Vic. c. 77), it is enacted that that Act shall be construed as one with the County Juries' Act, 1825, and any Act amending the same, and therefore also leaves the law affecting Coroner's Juries unaltered.

I am, sir, your obedient servant,
WALTER SCHRODER,
Secretary.

V. C. Mallan, Esq.

British Journal of Dental Science.

No. 480. LONDON, JAN. 15, 1888. Vol. XXXI.

LIGATURE OF BOTH LINGUAL ARTERIES IN A CASE OF CONGENITAL MACRO GLOSSA.

By Dr. Fehleisen, of Berlin.

There can be no doubt that, as a rule, in advanced cases of macro glossa an operation must be performed on the tongue, whether it be that we excise a wedge-shaped portion of the tip so as to give the organ a form somewhat approaching the normal, or that by repeated cauterisations, by means of the thermo-cautery, we endeavour to bring about a shrinking of the organ.

The case is different, however, when the patient is brought to shortly after birth in the early stage of the affection. In very young children any operation on the tongue is a thing not to be lightly undertaken, and yet it would appear *a priori* most desirable to attack the disease as soon as possible. The various measures which are usually recommended for such cases, are, however, altogether insufficient. The advice to take a nurse with a long nipple could only be given *solaminis causa*. Scarifying, followed or not by painting with an astringent, would only do more harm than good.

Parenchymatous injections, owing to their tendency to be followed by abscesses, are still more dangerous, if possible, than are operative measures.

Finally, the so-called compression of the tongue is a misery for the child, and in no single case does it even partially attain its object. The fixing of the jaws together, the sack shaped bandage, etc., originated at a time when the disease was not looked upon as a new growth, but rather as a prolapsus of the tongue owing to the paralysis of the retrahent muscles, and when it was sought to push back the tongue by mechanical means. These measures are, therefore, almost as much out of date as the long forgotten section of the genio-glossi muscles which was at one time thought to render more easy the retention of the "prolapsed tongue." We now know that the disease is due not to a falling forward but to a new growth in the organ, in fact to a lymphangioma of the tongue.

Virchow,* Humphry† and more especially Wyner‡ have shown that the anatomical appearances agree in a most extraordinary way with those of certain forms of elephantiasis.

Notwithstanding the fact that in elephantiasis of the lower extremities a continuous and energetic compression can be carried out more completely than in any other portion of the body, yet the results are only palliative. It would, however, be quite out of the question to think of applying to the tongue such compression as can be used for the foot and leg. It was owing to these consideration, and encouraged by the favourable result which Privy Councellor von Bergmann quite recently obtained in a case of elephantiasis of the leg by the ligature of the femoral artery, that I was induced to try a similar operation on a child with congenital macro glossa, which was brought to me at the Royal Surgical Policlinic. The case is as follows :—

Rosa H., born 14th Feb., 1885, showed nothing abnormal at the time of her birth. The child, however, never took the breast properly. Attacks of inflammation of the tongue now began to be noticed at intervals of a few weeks ; each lasting for a few days, and during this time they greatly interfered with the feeding of the child. The tongue is said to have become a "dark blue" colour during these attacks. The parents were soon astonished to see the organ gradually increase in size. The tongue is said to have constantly projected beyond the lips ever since the child was nine months old.

When I first saw it, the child was thirteen months old, and the tongue projected at least a centimetre beyond the edge of the lips. On the 26th August, 1886, I ligatured both lingual arteries, following Pirogoff's method. I first made an oblique incision from the mastoid process down to the hyoid bone and cut through the skin, adipose tissue and platysma myoides as well as the anterior wall of the capsule of the submaxillary gland. The gland was then drawn upwards by means of a hook, the posterior portion of the capsule cut through, whereupon the triangle formed by the ligament of the digastric muscle and the hypoglossal nerve came into view In this triangle the branches of the hypoglossal nerve were carefully separated, and the artery became visible (my reason for describing the process so fully and partly in Pirogoff's own words, is that this process for the ligature of the lingual artery has often quite wrongly been ascribed by many to Guérin or even to Hüter.) This method, however, originated with Pirogoff, and is described in his surgical anatomy of the arteries and fascia in such a full and masterly manner that no subsequent author has been able either to improve the least upon it or to modify it in any particular.

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* Virchows Arch. Bd. 7, p. 126.
† Med. Chir. Transact 1854, Vol. 65.
‡ Laugenbeck's Arch. 20th Vol.

With regard to the result of the operation, the day after the tongue was reduced to its normal size. On the second day it had swollen again almost to its former bulk and showed a dark blue colouration. A week after the cyanotic condition of the tongue began to disappear and the organ began to decrease gradually in size. At the present time, a little over a year after the operation, it no longer projects beyond the lips; when the child is quiet the tip lies between the edges of the teeth and is visible between the half opened lips. But if the child is called and made to talk, it immediately draws its tongue back behind the teeth, and it is then able to articulate single words. When it is feeding, which it manages to do in quite a normal way, the tongue is retained within the mouth.

In this case, though the ligature of the artery has not caused a full *restitutio ad integrum* it has, however, not only prevented a further increase in size of the tongue but it has also caused a considerable diminution in its bulk.

I believe the operation deserves a further trial in young children on account of its perfect safety; all the more as the cuneiform excision does not always give permanently satisfactory results.

DISCUSSION UPON THE USES AND DANGERS OF COCAINE.

(*Concluded from page* 15).

Mr. Henri Weiss thought the Society was discussing the question of the toxic effects of cocaine rather than its anæsthetic properties. With regard to the latter point he must confess himself to be satisfied with its pain-removing qualities. To ensure getting a satisfactory result it was necessary to be sure the injection entered the gum and did not regurgitate, as it was likely to do unless such a proceeding was prevented. In cases where the membrane was separated by inflammation or other causes, such an escape of the anæsthetic was very liable to take place, and so an unsatisfactory anæsthesia was the result. When carefully injected, he believed good results were arrived at, even when the periosteum was inflamed.

Mr. Walter Coffin remarked that one point of interest connected with cocaine had not in his hearing been mentioned. It was that when heated with water the salts of the alkaloid undergo a change, becoming converted into a body which rejoiced in a very long name, but which was devoid of anæsthetic properties. This substance possessed totally different chemical properties from cocaine, and he suggested that it was not impossible that the habit many had of warming the cocaine and water in order to expedite solution, might convert more or less of the anæsthetic into the other and non-anæsthetic substance. In answer to a question put by Mr. Stocken, he said he regretted he was unable to furnish the exact figures with regard to what temperature brought about the change of which he had spoken, but he believed that the temperature of boiling water would be high enough to convert some of the cocaine into the non-anæsthetic substance.

Dr. George Cunningham said: As the writer of one of the papers which had led to this discussion on the action of cocaine he should like to offer a few remarks in reply to some statements made that evening. Before doing so, however, he desired to call attention to some additional cases which were worth recording, as showing, first, the effects produced by lessening the amount of the drug injected; secondly, the effects of repeated doses; and thirdly, the results of internal administration of the drug by the stomach.

It would be noticed throughout the cases, that he had diminished the amount of the drug injected to 2½ minims of the 10 per cent solution, while the dose for internal administration had been increased. From the record of these cases it would seem that 2½ minims, 10 per cent. solution—*i.e.*, ¼ grain—by injection, had a more active physiological effect on the organism than 1 grain administered by the stomach.

On the other hand, a consideration of his cases would show that he had endeavoured to find out how far cocaine might be of service to them in those prolonged dental operations in which the ordinary anæsthetics afforded no assistance.

He was inclined to think that administration by the stomach would be found more satisfactory than by injection in such cases. It certainly seemed much safer.

It had been said that he was "unfortunate in his cases." That might be true with regard to a few cases, still he had no hesitation in saying that an increase in the number of minutely recorded observations by other practitioners would only substantiate the conclusions arrived at in his paper.

Mr. Browne-Mason, who regarded him as particularly unfortunate, now recorded twenty cases on a similar plan to his own. Without having had an opportunity of examining them he could not criticise his record so carefully, perhaps, as he should like to do. His statement that he observed distinctive objective phenomena in eight out of twenty cases, and the failure of the drug to relieve pain, seemed to indicate that even this advocate for the drug did not make out a very strong case against his (Dr. Cunningham's) observations. By making two injections of his total quantity of 10 minims 10 per cent solution, he at least doubled that loss which usually occurs by the escape of a part of the solution said to be injected. Not only so, but the tissue being so dense on the inner side of the jaw that there was considerable difficulty in injecting even 5 minims without considerable loss.

Despite the precautions which several gentleman seemed to think it necessary to take against this escape of the solution into the mouth, he thought that it was of little moment, and that the amount which escaped was greater than was usually supposed.

With regard to Mr. Weiss's special mention of the relief afforded to the pain in taking hold of a tooth with an acutely inflamed periosteum with the forceps, the Society would see that one of his cases seemed the very antithesis to the one mentioned by Mr. Weiss.

It was, he thought, interesting to notice how the advocates for the use of the drug by injection seemed reluctant to recognise its toxic effects. For instance, Mr. Weiss attributed these symptoms to the direct encouragement of the operator, and even Mr. Cotterell, who had nothing but successes to record, took occasion to describe such symptoms as even he noticed, and attributed them to fear. Others again suggested that the symptoms were due to quite another cause, such as dyspepsia, or the presence of a fraction of 1 per cent. of an impurity—in fact, to anything but the action of the drug.

With the record of experiments which already existed as to the physiological action of cocaine it seemed somewhat absurd to persist in ignoring the knowledge thus acquired.

As an addition to Mr. Boyd Wallis's valuable suggestion of combining pure ether with the cocaine, it might be noted that atropine was said to be an antidote to the toxic effects of cocaine.

Previous to making his communication to this Society, he had requested Professor Roy to suggest a possible antidote to its depressent effect, and he then recommended a trial of atropine. He (Dr. Cunningham) had just learned that some one in Germany had made practical experiments in this direction, and had found that animals to which an almost lethal dose has been administered, might be resuscitated by injection of atropine. He regretted being unable to give more information with regard to this, but would suggest adding sulphate of atropine tabloids (1-hundredth grain) to their stock of restoratives.

It would be noticed that the majority of practitioners who were using cocaine were doing so as an anæsthetic for the painless extraction of teeth; but even after a careful consideration of their experience, as well as his own, he was still firmly of opinion that it is not to be compared with nitrous oxide, whether regarded as to its sufficiency, its safety, or its certainty of action.

The objections to the injection of cocaine consisted, firstly, in its frequent failure to promote the necessary anæsthesia, and secondly, in the certainty than it was a possible source of considerable danger, without there being any means at disposal whereby to distinguish such cases from those where the drug might be taken with apparent impunity.

Mr. William Hern said, he had hoped that the time which had elapsed since the last meeting would have permitted members so to test the virtues of cocaine that they would have been enabled to come to a pretty unanimous verdict to-night as to its utility or value in dental practice; the character of the discussion, and the limited time at the disposal of the Society that night, dissipated that hope.

When considering the want of uniformity in the results obtained by the use of cocaine, he alluded in his paper (pp. 232

and 260, Transactions) to certain disturbing factors which should not be lost sight of when dealing with it, and he thought one could not emphasize too strongly the necessity of using (*a*) a pure drug, (*b*) a fresh solution, and (*c*) absolutely clean instruments. Attention to these points would perhaps exclude some of the untoward effects which had been laid to the charge of the drug itself; beyond these, however, he thought there remained a disturbing factor, viz., the unequal susceptibility of different patients to its action, with which we are unable to grapple unless the dose were a small one. Although it was sometimes difficult to eliminate the *post* from the *propter* effects, or even, as had been suggested by some speakers, to distinguish emotional manifestations from those which were truly toxic, yet further trials with the drug had tended to confirm his earlier conclusion, that the maximum dose (at least the initial one) should not exceed half a grain of the hydrochlorate.

In a recent case where, for the cure of fistulous canals in connection with the roots of the upper central incisor teeth, on two separate occasions he had drilled through the anterior alveolar wall with a rough bar, the anæsthetic results of half grain injection were particularly well marked and successful, the patient complaining of no pain and exhibiting no *objective* toxic phenomena; on the other hand, the *subjective* constitutional effects were such as to lead the patient to say on each occasion after the injection that "she felt rather stupid for a short time, and would prefer not to take a larger dose." In this case he thought toxic effects of a grain dose might have seriously interfered with the operation, besides unnecessarily upsetting the patient.

The majority of the speakers had seemed to have directed their attention chiefly, if not entirely, to the use of cocaine as an anæsthetic for extractions, an operation for which, in his opinion, it was not so suitable (for reasons before given, pp. 261 and 262, Transactions) as for many minor superficial operations on or about the soft tissues of the mouth, which occur frequently in daily practice—*e.g.*, the application of rubber, wedge clamps, and indeed any operation which involves mucous membrane, for which it was pre-eminently useful, and has at present no rival.

The Secretary then read a communication from Mr. C. W. Dunn, of Florence, in which he stated he had employed cocaine in ninety-two cases. In only two cases had he met with unpleasant results from his injections; in both these instances the patients lost their power of movement for from twenty to thirty minutes. In the other cases the patients complained of only slight pain, but he thought they did so because they had heard of cocaine and believed it was the proper thing to say they had felt very little discomfort. In eighteen cases the patients said they felt no pain. He had employed as an injection 1 grain of cocaine dissolved in ·10 minims of a 2 per cent. solution of phenylic acid. He had met with a pamphlet by Mn. Bargagli, of Siena, whose experience he thought would be of value to the Society, and he accordingly reported the substance of it as follows:—

Mn. Bargagli had used the same injection mentioned above in 300 cases of extraction. In 56 extractions between the ages of 7 and 10 (5 m.) 32 were painless, 24 doubtful. In 48 extractions between the ages of 10 and 15 years (7.5 m.) 35 were painless, 8 slightly, 3 severely painful, 2 doubtful. Of these 34 revealed no constitutional effect, 9 slight, and 5 severe general effects. In 196 cases, patients over 15 years (10 m.), 156 were painless, 33 slightly painful, 6 severely painful, 1 doubtful. 154 patients revealed no general disturbance, 34 slight, and 8 severe constitutional effects.

The slight disturbances comprised, general malaise, trembling and weakness of the limbs. These usually disappeared in from 10 to 16 minutes.

The severe disturbances were difficulty of breathing, disturbance of pulse, coldness and trembling of the extremities, prostration without faintness, cramps of the stomach, vomiting, transient aphonia, and amaurosis. He believes it is possible to foretell when anæsthesia will follow injection of cocaine and carbolic acid, as when such will be the case the patients always feel as if the gums, tongue, &c., were abnormally swollen. He does not think it possible to predict when unpleasant symptoms will follow the injection. He believes the emotional character of patients often determines the supervention of undesirable after-effects, while he would account for many failures to achieve anæsthesia by the fact that often the tissues of the gum refuse to absorb the material injected. None of his cases caused him alarm; the unpleasant symptoms invariably passed off in a short time.

THE DECIDUOUS TEETH; THEIR ERUPTION AND REMOVAL.*

By C. N. PEIRCE, D.D.S.

THAT the evolution of human dentition has, in common with the dentition of other mammals, been from a simple and homogeneous type to a more complex and heterogeneous one, both as regards structure and form, is established beyond a doubt; and in this modification of tissue from the simple to the complex, and its arrangement, nutrition and the *dietetic* habits have been accepted as important factors.

In considering intelligently the origin and peculiarities of mammalian teeth, and what might constitute a primitive mammalian dentition, it would seem quite necessary to have some definite knowledge of the teeth of the mammalian ancestry, and from these note the gradual change.

If, as has been suggested, we are limited in our choice to the Batrachia and Reptilia as mammalian progenitors, then to these animals must we look for our most primitive tooth-forms. These we find consisting of cone-shaped anchylosed crowns, the number large, uncertain, and frequent, and the succession almost endless.

Accepting the "placoid scale" or the "dermal denticle" as the structure from which all teeth were primarily derived, we have these teeth of the Batrachia and Reptilia as a step in advance, while in certain of the Reptilia a still further progress is made in the implantation of the teeth in distinct sockets, with the addition of a cingulum or an abortive cusp on the crown, and a tendency to bifurcation of the roots by flattening and longitudinal grooving.

From these primitive forms, with numbers and durability so varying, there is much room for modification before we reach the scalpriform incisors of the Rodentia, the trenchant sectorial tooth of the Carnivora, and the broad grinding molars of the Herbivora, or the less specialized and comparatively-fixed-in-form-and-number teeth of man. The uncertainty in the number and in the succession of the teeth of the Reptilia as compared with the two sets and definite numbers of the higher mammals has led to much conjecture regarding the origin of this definiteness, and to an effort to determine whether the deciduous or the permanent set is entitled to the credit of priority in its evolution; or, in those mammals which have but one set, whether it is the permanent or deciduous which has been lost.

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* A paper read before the American Dental Association.

Prof. Owen, in his effort to express concisely the conditions of replacement, made use of the terms "diphyodont" and "monophyodont," and applied them as relative and interchangeable terms with "heterodont" and "homodont," believing that animals having two sets of teeth (diphyodont) had teeth differing in form and complexity in the several localities in the mouth (heterodont), while those having but one set (monophyodont) had teeth of similar form occupying the inferior and superior maxillæ (homodont); but to this rule many exceptions have been found.

Dr. Wortman, in speaking of the relationship of the deciduous to the permanent set, asks: "Are they, the deciduous teeth, superadded embryonic structures similar to the amnion and allantois, which subserve a temporary purpose and disappear with approaching maturity, or are they to be homologized with the first set of teeth of the lower vertebrates?"

The very rudimentary condition of the milk or deciduous teeth in some mammals is evidence of their transitional character; and if it is true that tissues most recently developed are frequently the first to be atrophied, it would seem that these were superadded structures. On the other hand, we must recognize the fact that the enamel-organs of these deciduous teeth arise *de novo* from certain portions of the lining membrane of the oral cavity, and that at a period in their progressive stage of development, by a process of budding, the enamel-organs of the deciduous teeth, just as those of the temporary set do from the epithelial layer of the mouth. Another fact in this connection must also be noted, viz., that the germs of the first permanent molars by their *de novo* origin stand physiologically in the same position as the more anterior deciduous teeth, and that the germs of the second permanent molars arise from those of the first, and the third from the second, just as do the germs of the permanent anterior teeth from the enamel-organs of their predecessors.

In noting the origin of the first permanent molar, Dr. Wortman says: "There is one thing upon which I would strongly insist, and that is, that the first true molar in the human dentition is a persistent milk molar.

In following the development of the deciduous teeth from the appearance of the epithelial eminence, the epithelial inflection, and the epithelial bands, or enamel-organs, we recognise various progressive changes in the germinal tissues between the seventh and the seventeenth week. Modifications are taking place during this period in the embryonic structures for the development of the twenty temporary teeth and, commencing about the fifteenth week, for the development of what is recognised as the first permanent molar. From the seventeenth week these rudimentary structures for the temporary teeth begin to assume on their prospective coronal extremities the shapes of the future crowns ; and as the process is completed by the development of ameloblasts for the enamel and osteoblasts or dentinoblasts for the dentine, the solidifying process commences by the deposition of the salts of lime in these previously prepared tissues. This process goes on, probably not without temporary interruption, until the crowns are completed, the incisors at about the fortieth week of fœtal life, or at birth, the molars and cuspids when the infant is not more than six months of age.

At this time the crowns are advancing toward the mucous surface, facilitated by a threefold action, viz. the elongation of the dental pulp, the calcification of its surface to form the dentine of the root, and the adhesion of the dental sac or follicle to its solidified periphery. This last process places the cemental germ or matrix in position and stimulates it into functional activity, for until this period we have only had preparation for the development of two of the hard dental tissues (enamel and dentine); but with the cement matrix in position germinal development is completed, and growth henceforward progresses, modified only by accident or systemic and nutritional conditions.

This gives us, at about the twentieth week of intra-uterine life, the deciduous tooth-germs with their partially-calcified tissues incased in bony crypts, which have been calcifying in the form of septa between the developing germs.

Inclosed first in a sac, the outer layer of which becomes ossified, the calcified tooth-crown, with its primitive structures and elongating root, is completely surrounded by a bony structure, each tooth in its own individual apartment, and occupying it so fully that room for growth can only be secured by the absorption of the superimposed tissue.

The inferior mandible shows an irregularly calcified groove, ossification of the septa being at this period of embryonic life in a delicate and imperfect condition. The superior jaw has a similar appearance, with septa more decided, though the structure is not so readily displayed. The teeth, removed from their incasements, represent the extent of calcification; the incisor crowns having attained about two-thirds of their normal length, while the cuspids and molars have little more than formed their cusps.

The superior centrals, both above and below, have the process absorbed from their labial surfaces, while the palatal and lingual surfaces are still covered by a border of the alveolar process kept prominent by the crypts which contain the germs and partially calcified crowns of the permanent successors.

The absorption of the superimposed tissue from the advancing crown, and the elongation or growth of the root by an increase in the pulpy mass or formative tissue, and its calcification, are the progressive developmental processes which we term "eruption of the teeth." While we shall not now discuss the propriety of the term used to express this physiological action, it is a pertinent inquiry whether "eruption" is an appropriate name for the process under consideration.

The force by which the teeth are propelled toward and through the mucous surface into position is thought by many to be something in addition to that indicated above as the result of normal growth. However this may be, there are occasional aberrant or abnormal results which this theory will not explain, viz., teeth erupted at birth or a few weeks after, which teeth are not further developed than normal, yet the crowns are exposed as fully as if calcification were complete, such teeth being without further attachment with the subjacent tissue than the adaptation of the gum to their necks, while the uncalcified pulp is in juxtaposition with the base of the crown or of the abortive root, as the latter may have been more or less developed.

Such premature eruptions are usually found in children suffering from improper nutrition or other abnormal systemic conditions, and are independent of the force resulting from normal growth. The question at once arises, whether such premature presentation of the tooth-crown is not wholly due to an absorption or wasting of the superimposed tissue, rather than to the elevation of the crown, which could not well take place without growth of the root, unless it were from the contraction or an expulsive effort of the tooth-follicle.

Charles S. Tomes, in his "Dental Anatomy," p. 191, in speaking of this elevation of the tooth-crown, says: "Very strong objections have been brought forward, clearly proving that this cause (elongation of the root) is quite inadequate to explain all that may be observed. In the first place, teeth with very stunted roots, which may be practically said to have no roots, are often erupted. Again, a tooth may have the whole length of its roots completed, and yet remain buried in the jaw through half of a person's life, and then ate in life be erupted. Moreover, when a healthy normal tooth is being erupted, the distance travelled by its crown materially exceeds the amount of addition to the length of its roots which has gone on during the same time."

A further illustration from the same author is given from "Comparative Anatomy:" "The tooth of a crocodile moves upward, tooth-pulp and all, obviously impelled by something different from mere elongation; and my own researches upon the development and succession of reptilian teeth clearly show that a force quite independent of increase in their length shifts the position of, and erupts successive teeth. But what the exact nature of the impulse may be is an unsolved riddle, the explanations which I have read being, to my mind, less satisfying than the admission that we do not know."

In reference to impacted teeth, *i. e.*, teeth whose elevating or eruptive tendencies have been restricted or entirely obstructed from any cause, whether it be unabsorbed bone or indurated gum-tissue: when the root completes its development under such unfavourable conditions, it is usually stunted, or curved (more frequently the latter) in the direction where the surrounding tissue yields most readily. Hence the curvature of the roots is invariably posteriorly, or toward the tuberosity or the ramus, as the tooth may be located in the superior or inferior maxilla.

Teeth in a horizontal position, or inverted, as sometimes occurs, are subject to the same law of progress or projection, that is, in the line of the least resistance. All such teeth, when once fully formed without being erupted, make very slow progress toward the mucous surface expect when adjacent or overlying teeth are extracted; then the necessary absorption of their alveoli exposes to view the previously imbedded teeth. There is a mechanical force, however, acting on all such teeth, tending to bring them to the surface, the same as that which induces the elongation or protrusion from the socket of an unantagonized tooth. The repeated closing of the jaws must exert, to a large extent, this mechanical force, just as the bung in a barrel is elevated by a blow being struck upon the stave on either side of it.

With normally erupted teeth, from six to eight months after birth, the bony crypts, which have scarcely completed the protective cell for the partially calcified tooth-germs and follicle, begin to be absorbed. This process goes on with considerable activity until the labial or outer wall of the alveoli is removed, which takes place in advance of the portion covering the cutting edges. The temporary teeth are not all in the same progressive stage of development; hence we find that while some of the anterior teeth are being freed from their bony incasement the posterior ones are still retained within their crypts, or it may be that some of them are but perfecting their inclosures.

The absorption of the process from the incisor crowns takes place in the average child at seven months of age. The labial surfaces and cutting-edges are free from the bony covering, while the lingual and palatal surfaces are yet protected by the spongy bone which forms part of the crypt of the permanent successor. As soon as these crowns have freed themselves from their bony surroundings and have perforated the superimposed gum, the alveolus ripidly develops around the necks of the teeth and the elongated roots, the depth of the anterior part of the jaw increasing rapidly by this process; and as the molars are erupted, a similar condition in the posterior part of the jaw is concomitant with the elongation and elevation of the rami. Charles S. Tomes says (p. 192, "Dental Anatomy:") "The front teeth are erupted first, and the jaw deepens first in front; later on, the back teeth come up and the jaw is deepened posteriorly; meanwhile, the elongation of the rami has been going on slowly, but without interruption. Thus is brought about a condition of parts allowing of the whole series of teeth coming into their proper mutual antagonism."

(To be concluded.)

ODONTOMES.

By J. Bland Sutton, F.R..S.,

Hunterian Professor; late Erasmus Wilson Lecturer on Pathology, Royal College of Surgeons; Honorary Member of the Odontological Society of Great Britain.

(*Concluded from page* 8.)

The mass is invested by cementum; inside this casing is a shell of dentine, the tubes radiating outwards and disposed with some regularity. This dentine layer was deficient at the distal end of the tumour. The interior of the tumour was filled with an ill-defined osseous substance. This odontome, which has been repeatedly figured, was originally described by Sir John Tomes in the Transactions of the Odontological Society, 1863. It was removed from the upper jaw of a man aged forty-one, by Mr. Hare, of Limerick. Its true nature, however, was not made out until Mr. Charles Tomes published a careful account of it in 1872.*

This specimen is further interesting as being one of the few odontomes found connected with the upper jaw in man.

Radicular odontomes, though very rare in man, are comparatively common in mammals, especially rodents, whose teeth grow from persistent pulps. It is impossible to decide the nature of the tissue composing them without seeking aid from the microscope. Examples of each form will now be given:—

1. *Radicular Dentomata.*—As has just been stated, this form of odontome occurs with greatest frequency in rodents, the purest forms accurring in marmots. I have previously described some cases in the Transactions of this Society, but for the sake of completeness they will be briefly re-introduced in this paper.

My first example occurred at the roots of the upper incisors in a Quebec marmot. The tumours produced absorption of the hard palate aad projected on the roof of the mouth, simulating supernumerary teeth, for which they were at first mistaken. Structurally the enlarged fangs were composed of dentine.

It may here be mentioned that odontomes in the lower mammals are by no means most frequent in the lower jaws, as in man. Not uncommonly they are multiple, as we shall see.

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* Trans. Odont. Soc., 1872. See also Tomes's "Dental Surgery," 1887.

One of the most striking cases occurred in a young marmot, an odontome existing at the base of each incisor tooth in the upper and lower jaws. Those in the lower jaws were larger.

Considering the size of the animal the relative size of the odontome is very great. The tumour was mainly composed of dentine. The point of attachment of the incisor to the odontome is clearly seen in the centre of the drawing, where a small cavity represents the remains of the pulp chamber, whilst around it the dentine exhibits a regular arrangement contrasting with the surrounding confusion.

A recent addition to this class from the lower mammals which has come under my notice occurred in an adult Canadian porcupine. My attention was drawn to it by finding a large abscess on the outer side of the cheek. This led to bare bone. The parts were dissected and an odontome was detected. An examination of sections showed the mass to consist chiefly of dentine. The odontome was decalcified and sections cut for the microscope. Almost the whole of the cavity was obliterated.

2. *Radicular Cementomata.*—Odontomes of this variety differ in no respect in their external characters from those just considered. This will be evident from a comparison of the specimen of the tumour in the porcupine and one exhibited, which occurred in an agouti. As is the case in nearly all odontomes, suppuration and necrosis of the bone had taken place. The pus had travelled along the socket of the tooth, which was so large that the teeth moved loosely in the jaw.

On microscopic examination three-fourths of the tumour was found to be composed of cementum. Small patches of dentine were detected here and there throughout the mass, and dark interglobular spaces.

The odontome, was obtained by M. Méguin, a veterinarian in the Imperial Guard. By him it was given to M. Bouley as a "dental spinal ventosa."

It seems to have been examined by Robin and Magitôt Later, Bouley allowed Broca to re-examine the specimen. This observer found the crown to be perfectly formed, but the fangs embedded in a mass of cementum occupying the pulp chamber. The occurrence of radicular odontomata in horses ought, theoretically, to be frequent, for the fangs of their teeth are not completed until long after their eruption.

Professor Windle and Mr. Humphreys* have recently described from the human subject a specimen which seems to belong to this variety. It occurred in a young man aged twenty-five. The odontome was situated in the lower jaw, on the right side, in the neighbourhood of the second molar tooth. After more than four months, excruciating pain, accompanied with profuse suppuration, life being several times despaired of, the odontome, seven months after its presence was first noticed, became liberated and fell into his mouth. The crown is fairly well formed, the labial surface being perfect, the lingual somewhat tuberculated. The roots are fused into an irregular mass. The under surface is irregular, and is at one point excavated into a hollow.

It is much to be regretted that it is impossible to obtain sections of this interesting tumour. As far as can be judged, the odontome consists of cementum overlaid in places with enamel.

It is far from the purposes of this paper to deal with the effects of odontomes, but the clinical history of the preceding case is very valuable, we read "his life being several times despaired of." In many of the recorded cases a train of severe symptoms, and in some, terrible mutilation from the surgeon, has been the result of these tumours. In one case the operative procedure was followed by death.

In the case of one of the marmots, in the porcupine, and in the agouti I am convinced that death resulted from the profuse suppuration and necrosis set up by the odontomes. When we remember the serious trouble frequently caused by the cutting of a wisdom tooth, we can very well understand the amount of constitutional disturbance likely to be caused by the eruption of a mass two, three, four or more times the size of such a tooth.

Radicular Osteo-dentomata.—Structurally these are of hard tissue traversed by canals which contain blood vessels. The dentinal matter may be deposited in a globular form, from the vascular canals; tubules, resembling in their size and mode of ramification those of dentine, pass off and lose themselves indefinitely in the surrounding hard structure.

No odontomes belonging to this group have been described in the human subject, and as far as our present knowledge extends, the only mammal in which they have been described is the elephant.

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* "Journal of Anatomy and Physiology," vol. xxi. p. 665. An account of two rare tumours connected wilh the teeth.

The museum of the Royal College of Surgeons possesses some good specimens of odontomes. As is common with radicular odontomes occurring in mammals whose teeth possess persistent pulp, the growth is arrested and the tooth is deformed.

The Museum of the Odontological Society contains a good specimen of this nature which has been examined microscopically by Mr. Charles Tomes.

It is necessary to draw attention to those large masses of osteo-dentine which occur so frequently in the pulp of elephants' teeth, not only in the tusk, but also in the molars. These masses of secondary or osteo-dentine must not be regarded as odontomes, but as the direct result of inflammation of the pulp.

Small nodules of osteo-dentine are of frequent occurrence in the pulp of healthy human teeth, and excite but little surprise. It is only their bulk which causes wonder, when they occur in the pulp of elephants' teeth.

Similar formations of osteo-dentine occur normally in the teeth of the sperm whale and in the grampus.

Specimens showing the stalactitic appearance of those formations are in the Museum of the Royal College of Surgeons.

D. *Aberrations of the whole Tooth-germ.*

Composite Odontomata.—This is a convenient term to apply to those hard tooth tumours which bear little or no resemblance in shape to teeth, but occur in the jaws, and consist of a disordered conglomeration of enamel, dentine, and cementum. Such odontomes may be considered as arising from an abnormal growth of all the elements of a tooth-germ —enamel-organ, papilla, and follicle.

Up to the present time I have found no such odontomes in the lower animals, all the recorded cases having occurred in man. A typical odontome of this group is the one described by Mr. Heath* as occurring in the lower jaw of a young lady aged eighteen. The clinical history in this case is very instructive, and the reader is referred to the original account of it.

The specimen is further valuable on account of the exhaustive and careful histological examination made by Mr. Charles Tomes. The tumour is made up of enamel, dentine, and osteo-dentine.

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* Clinical Society's Transactions, vol. xv.

The Museum of the Middlesex Hospital contains a specimen of odontome, unfortunately it is without history. I have made a histological examination of the tumour. It is scroll-like in form, the reverse side being quite hollow. Its convex surface is dotted with minute projecting denticles. It is composed of cementum largely mixed with dentine. The denticles are entirely composed of this substance, and on section are seen to be deeply embedded in the mass of the tumour. Enamel is present in very small quantity.

The well-known case reported by Dr. Forget, belongs to this class. The patient was aged twenty, but the disease had been noticed since the age of five years. Behind the first bicuspid no teeth were seen, but the jaw as far back as the ramus was the seat of a smooth unyielding tumour.

On microscopic examination the tumour was found to consist mainly of dentine, the surface of which was in places covered with enamel dipping down into the crevices, at the bottom of which cementum was found.

In the specimen removed by Sir W. Fergusson, the tumour consisted of dentine, cementum, and enamel thrown irregularly together. As in the preceding case a large portion of the jaw was removed with the odontome, the true nature of the tumour not being recognised before the operation.

In the same category may be placed the odontome dislodged by Professor Annandale* from the jaw of a young woman aged seventeen, who never had any molar teeth in the left lower jaw. It weighed 300 grains. It consisted of dentine and osteo-dentine, capped by enamel.

Not only is this class of odontomes composite in that the tumours comprised in it originate from all the elements of a tooth-germ, but they are composite in another sense. In the majority of cases the tumour is composed of two or more tooth-germs indiscriminately fused. But they differ from the cementomata containing two or more teeth, from the fact that the various parts of the teeth composing the mass are indistinguishably mixed, whereas the individual teeth implicated in a cementoma can be clearly defined.

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* "Edin. Med. and Chir. Journal," 1873.

E. *Anomalous Odontomata.*

In this section we must consider a few very remarkable cases. The first was placed on record by Mr. Tellander, of Stockholm ; the details are as follows :—

A female, aged twenty-seven, applied to him in consequence of an attack of inflammation of the right upper jaw, due, as she supposed, to the presence of the roots of a temporary molar. The temporary teeth, so far as was known, presented nothing unusual, and were shed and replaced by the permanent set, except that on the right side of the upper jaw, the first molar, the two bicuspids, and canine failed to appear. The spot where these teeth should have been, became at the age of twelve the seat of hard painless enlargement. When the patient applied to Mr. Tellander there was a free discharge of pus from this spot, some stumps were removed, and carious bone detected. Subsequent examination showed that enclosed within this carious bone was a cluster of minute teeth. There were nine single teeth, each one perfect in itself, having a conical root with a conical crown tipped with enamel ; also six masses built up of adherent single teeth. The denticles presented the usual characters of supernumerary teeth. About a year afterwards a tooth was found making its appearance in the spot from which the host of teeth was removed.

A similar case has been recorded by Sir. John Tomes,* the details of which were communicated to him by Mr. Mathias, whilst on medical service in India. A Hindoo, aged twenty, had a large tumour which occupied the front part of the mouth, and pressed the upper lip against the nose, thus preventing the closure of the mouth. After a few days of preliminary treatment, a hard body was detected by a probe beneath the surface of the tumour ; this eventually turned out to be a number of ill-formed teeth united. Further search was instituted until at last fifteen masses of supernumerary teeth and bone were removed. The soft parts rapidly healed, the deformity disappeared ; the only peculiarity noticeable was the absence of the central and lateral incisors. The canines occupied their usual position.

A third example of this remarkable condition has been recorded by Professor Windle and Mr. Humphreys.* The case occurred in the practice of Mr. Sims at the Dental Hospital, Birmingham. The tumour was found in the mouth of a boy aged ten years. It was found that neither the deciduous nor permanent right lateral incisor or canine had erupted. The space thus unoccupied was filled by a tumour with dense unyielding walls which occasioned no discomfort. On opening this cyst forty small denticles of curious and irregular forms were removed from the interior. The largest possessed fourteen cusps. Many are caniniform, with fairly well-formed crowns and roots, the former being covered with enamel. Some resembled supernumerary teeth, while others consisted of several small denticles cemented together.

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* Trans. Odont. Soc. of Great Britain, vol. iii, p. 365, 1861-3.

* Journal of Anat. and Physiology, vol. xxi, 1887.

Mr. Heath* records briefly a case of similar nature. A boy, aged four years, had a cyst connected with the jaw, in the situation of a temporary canine, which was wanting. On cutting into the cyst, seven small irregular nodules of dentine and enamel were extracted.

It seems to me that a large amount of light is shed upon these three cases by a study of the maxilla which contained the odontome. In addition to the main mass of dental tissues constituting the odontome, a large number of smaller masses of dental tissues were found sequestrated in various parts of the surrounding bone. For comparison with the denticles, obtained from the patients of Tellander, Mathias, and Windle, I have had six of the nodules from the horse's maxilla; their nodular appearance is very characteristic. The majority of them, judging from a microscopic examination of a few typical ones, consist mainly of cementum, some are true bone, and a few contain dentinal tubules.

The facts of this specimen lead me to believe that the cases reported by Tellander, Mathias, and Windle must be included among odontomes.

(*To be continued.*)

Bands for Regulating.—Dr. C. H. Harroun suggests the use of piano wire flattened with a hammer, bent to conform to the shape of the tooth, or teeth, soldered with soft solder and vulcanized in the plate, as a simple and effective tooth band to be used for any temporary appliance.

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* "Ashhurst's Ency. of Surgery," vol. v, p. 532.

British Journal of Dental Science,

LONDON, JANUARY 15th, 1888.

THE DISCUSSION UPON COCAINE.

There are few functions of learned societies so useful as the opportunities they afford of collecting, weighing and sifting out the many *questiones vexatæ* which from time to time trouble the professions. The recent discussion at the Odontological Society of Great Britain upon Cocaine, illustrates this fact very pointedly. A new drug, Cocaine was introduced to the profession with a flourish of trumpets, and very rapidly rose into popular favour. Its scarcity, its high price, and the boundless faith displayed in its employment all tended to obtain a favourable reception for it by the public But like so many other bubbles, the cocaine craze received a check, and its gossamer expansion ceased. The extravagant expectations of its value have become modified with the acquirement of more exact knowledge, and cocaine at one time vaunted almost as a panacea against all bodily ills, has now assumed its rightful position and is justly claimed as a very useful, if not universally applicable means of assuaging pain, and promoting anæsthesia. The Odontological Society having had its attention drawn to the uses and dangers of cocaine, firstly, by Mr. Morton Smale, and subsequently through the mediumship of two thoughtful papers respectively by Mr. Hern, and Dr. Cunningham, issued inquiry forms to its members asking for their personal experience of cocaine in dental practice. The Society then further held a discussion at which several observers added more fully to the reports mentioned above, and, thus a fairly general expression of opinion was obtained. Perusal of the Reports published in the Society's Transactions, and the discussion which took place upon Mr. Hern's and Dr. Cunningham's papers leave some feeling of disappointment. Such a sentiment, however, is really not to be wondered at as there was sure to be a revulsion of feeling after the inordinately high estimation of the merits of the drug at first entertained became weighed in the exact balance of experience. The discussion has certainly achieved great good, it has brought home to the minds of thoughtful and practical men two truths, viz., that while cocaine is unquestionably a very valuable addition to the dental pharmacopeia, it is yet one which needs the utmost care and forethought in its employment. Cocaine by its uncertainty alike in producing the desired effects of anæsthesia, and the unwished for results of cardiac prostration, cerebral excitement and delirium, is not a drug upon which it is wise to found too rigid anticipations. Its extreme uncertainty was curiously and emphatically brought out during the discussion by the fact that while some observers affirmed positively that they had never experienced untoward symptoms during its use, others as strongly insisted upon its dangers, since patients of theirs had shown the most undesirable symptoms during the attempt to produce anæsthesia by cocaine. As it was pointed out by some speakers, much of the opprobrium hurled against the use of the drug, was really uncalled for when the cocaine was applied in suitable cases. Used haphazard, cocaine is undoubtedly dangerous and unsatisfactory, but used for lessening the sensibility of the gums during wedging, applying the rubber, and so on, it answers well. As an obtundent its use cannot be absolutely relied upon, and in all operations when deep and repeated hypodermic injections are required cocaine has not, it would appear fulfilled the original expectations of its merits. In extractions when these are of an ordinary character, and the transitory action of nitrous oxide gives sufficient time, that anæsthetic is certainly safer and pleasanter to take, being free from after effects, than is cocaine, and possesses the additional merit of being absolutely *certain*. Still even in extractions cocaine, as was pointed out possesses merits, and in cases in which the operation must be protracted, the repeated submucous injection of cocaine is probably more advisable than the resort to general anæsthesia by chloroform. Even here, however, cocaïne cannot be entirely relied upon, for where much antecedent inflammation and hyperæsthesia has existed it is not always possible to render the tissues analgesic by any local application. There is little doubt that most dentists will employ cocaine in other operations than extracting, and will in that way arrive at satisfactory results, and it will however be wise for us to warn our patients of the uncertain nature of the action cocaine is likely to produce, and so protect ourselves, should the anæsthesia fail. Of course for persons who like the late Frank Buckland "prefer to be present at the operation," cocaine is the drug. The discussion left us very much where we were before, as far as our knowledge of the treatment of dangerous symptoms goes ; indeed, the most general of general agents for resuscitating the individual poisoned by cocaine, were recommended and used, but as happily the toxic symptoms appear to work off in a few hours, perhaps the less that is done the better for the patient. Cocaine has suffered at the hands of enthusiasts who, vaunting its properties beyond its merits, have brought about a wide spread distrust. We hope that the light now thrown upon the question at the discussion at the Odontological Society, will enable dentists in general to form more just and deliberate judgment upon the question than they have been up to the present time enabled to do.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.—The following Members were elected at the Annual General Meeting of the Society Council, as Officers and Councillors for the year 1888. *President : Daniel Corbett (Dublin). Vice-Presidents :* (Resident) S. J. Hutchinson, J. H. Mummery, *W. F. Forsyth*; (Non-Resident), Richard Rogers, (Cheltenham), G. C. McAdam, (Hereford), *J. Cornelius Wheeler*

(*Southsea*). *Treasurer:* Thomas Arnold Rogers. *Librarian:* Felix Weiss. *Curator:* W. C. Storer Bennett. *Editor of the Transactions:* Frederic Canton. *Honorary Secretaries:* Willoughby Weiss, (Council), C. J. Boyd Wallis, (Society), *E. G. Betts*, (For Foreign Correspondence.) *Councillors:* (Resident) J. F. Corbett, J. Smith Turner, Sir Edwin Saunders, John Fairbank, David Hepburn, Ashley W. Barrett, *Walter Coffin*, *Thomas Gaddes*, *R. H. Woodhouse*; (Non-Resident) F. H. Balkwill, (Plymouth), George Brunton, (Leeds), E. Apperley, (Stroud), J. H. Redman, (Brighton), *W. Bowman Macleod* (*Edinburgh*), *R. Wentworth White* (*Norwich*). The names in the preceding list printed in Italics are those of the *new* Officers and Councillors recommended for election at the Annual Meeting on Monday, January 9th, 1888.

THE DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.—The second of the series of Smoking Concerts held by this club, is announced for Thursday, 2nd of February. The energetic Secretary of the club, Mr. James Colyer, who, by the way, is now House Surgeon to the Hospital, has arranged for a good programme, and has enlisted the kindly offices of Mr. Lawrence Read as chairman. The concert will take place at Anderton's Hotel, Fleet Street. While upon the subject of this hospital, we may mention that at the next meeting of its Students' Society to take place at Leicester Square at 7 p.m. on 16th prox., Mr. H. J. Badcock proposes to discourse upon the Dentistry of the Past, a subject upon which a less gifted man than the present Saunders' scholar may well wax eloquent.

ANOTHER DISCUSSION UPON COCAINE.—One is becoming quite anæsthetic upon this theme, unfeeling we should say, but really the air has been so full of cocaine that the mind is little surfeited by it. No doubt the Odonto-Chirurgical Society will have an excellent discussion, and possibly some new facts will be stirred up.

COCAINE.—Mr. Samuel Atkins, speaking at the Pharmaceutical Congress said: The increasing extent to which cocaine is employed as a local anæsthetic, and the absence of uniformity in the various makes as they appear in commerce, justify a passing reference to the alkaloid. Although recent investigations have considerably enlarged our knowledge of the chemistry of this base, there still remain obscure points which require for their settlement further experimental study. Prominent amongst these is an inquiry now proceeding into the nature of the amorphous substance or substances which are commonly associated with the crystalline alkaloid. Meanwhile, in view of the comparative ease with which cocaine can be obtained in a finely crystallisable condition, it seems needless to resort to other than the crystalline base.

A COSTLY TOOTH.—According to the *Leeds Mercury* the following case was recently tried at the Otley County Court, before Mr. Judge Gates, Q.C. Francis Slater Lee, eleven years of age, sued by his next friend Adam Lee for £3 10s., damages for an assault committed by Francis Cooper, manufacturer, of Guiseley. It appears that defendant was at a sale in a shop in Town-street, Guiseley, on the 30th April last, and being annoyed by boys blowing through a hole at the bottom of the shutters, he shoved into the hole through which the noise was caused, an iron rod. Just at the time he did so, the plaintiff was in the act of blowing through the hole, and as the defendant used some force a tooth was knocked out of the lad's mouth, and other injuries inflicted.—For the defence it was argued that it was a misadventure pure and simple, for which the defendant was as sorry as any one. Verdict for the plaintiff for £2 10s.

DENTISTS AND DIET.—We have many times insisted that dentists should be well posted up in dietetics, the following from the American *Lancet and Clinic* is worthy of careful perusal. Dr. Geo. D. Hays, says:—"We have long been accustomed to hear that many of the evils of modern life owe their origin to our choice of *white* flour. That this is not so, an examination of the wheat-berry will show. This has five coats—an epi- meso- and endocarp, an opisperm, and a tegmen. The three outer ones have no value whatever as nutriment; within the episperm is a layer of gluten cells, chiefly albuminoids, and finally, in the endosperm, which constitutes the bulk of the grain, we find starch mixed with albuminoid cells. In the old process of milling, the perisperm (the part within the episperm) was, on account of its close attachment to the inner husk, largely carried away, leaving the bolted flour the poorer for its loss. Hence the vegetarian, Sylvester Graham, whose name is applied to bread made from unbolted flour, was correct in his time in saying such bread contained the most nutriment. The present gradual reduction process saves this portion of the wheat. The bran itself is composed of woody fibre, and contains absolutely no nutriment. It may have a mechanical value with those of a constipated tendency, but this is all The wheat loaf and the white flour contain a much larger percentage of phosphates and gluten than the Graham loaf of unbolted flour.

EGYPTIAN DENTISTRY.—Gold filling is genarally considered to be quite a modern invention: and so it is as regards Europeans. But, as a matter of fact, says a contemporary, the practice is over 2,000 years old, and was practised by the ancient Egyptians; for gold stoppings have been found in the teeth of some of the mummies at Thebes. We often hear the nineteenth century spoken of as an age of specialism, as though specialism were a novelty; but Herodotus tells us that in his day there were doctors for every disease and for every separate part of the body. Truly there is nothing new under the sun, as we often hear, but are so unwilling to believe.

A METHOD OF TEMPERING.—S. P. Davis in the *Scientific American* says that a drill heated to cherry redness and driven into a cold bar of lead will be much harder than when tempered by the acid bath. It is said that instruments thus treated can successfully be used for boring into the hardest steel and plate glass.

Amputating Pulps.—The Editor of the *Western Dental Journal* says, " We do not desire to discourage any laudable practice in the field of conservative dentistry, but in all candour we would like to enquire why attempts should be made to preserve remnants of pulps, a practice which every now and then is strongly advised by men whose authority is quoted and whose advice has the effect of leading tyros into a practice which we believe is a grossly erroneous one. Recent literature has again brought this method to notice, and we ask why the seal of condemnation should not be placed upon such advice. Granting that an extremity of pulp, can be kept alive, or that the pulp in one root may be preserved when it has been destroyed in other roots of the same tooth, —granting this, will a sane man describe how this remnant is of benefit to the welfare of that tooth. Is it expected that the tooth will be nourished by this crippled tissue? If life has been preserved to it for a time, let them tell us in what respect the tooth is better than it would have been had the pulp tissue been entirely removed. Has the tooth been reinforced by the remnant in a remote part so that it can better resist decay? Any attempt to preserve pulp tissue where much of that tissue is removed by disease or by surgical means, will inevitably result in an enormous per cent of failures, and will bring to the operator disgrace and to the patient discomfort. No one can afford to make such uselese experiments fraught with such risk, and the men who advise such practice should seek notoriety in other channels.

Sp. Myrciæ (Bay rum) is not well known in England, being prepared from myrcia acris. Is obtainable at the American houses.

Abstracts of Foreinn & British Journals.

DENTAL COSMOS.

THE COMBINATION OF METALS FOR FILLING TEETH.

By Dr. C. T. Tockwell, Springsfield, Mass.

The writer believes that the employment of a combination of metals as a filling material is eminently successful in many cases.

He has for some years used combinations of amalgam and gold, and "Robinson's fibrous and textile metallic filling" and gold. (The latter, the terms for brevity "Robinson's foil,") used in the order named. In the majority of cases he adopts the amalgam and gold combination.

Robinson's foil is valuable in starting large crown fillings to be finished with gold. But the cases where it serves the best purpose are in starting fillings on the approximal surfaces of teeth, especially of the bicuspids and molars, when not too badly broken down. Enough of it should be used to form, when finished, an external border of this metal at the cervical margins of the cavity, else the good effect will not be so apparent. If, however, the tooth is badly broken down, or it is of a soft, frail texture, he starts the filling with amalgam, and at a subsequent sitting finishes with gold. He restores the normal contour of the tooth with amalgam, at the first sitting, and subsequently cuts away such portions of the amalgam as may be deemed desirable, replacing the same with gold, so that when finished, especially with the anterior teeth, nothing but gold appears to ordinary observation. Good anchorage may be secured in and around the amalgam, and the gold can be so placed as to conceal from view all traces of the amalgam. A sort of chemical union takes place between the gold and amalgam, so that from a comparatively slight point of anchorage the gold may be built up and carried well over a slightly-rounded edge of amalgam, thus hiding it from view. The amalgam will become dark in shade, and perhaps black, but the gold retains its native appearance.

In almost any case of badly broken-down teeth the original contour of the crown may be easily restored with amalgam, even if the natural crown is almost or quite gone, and when once hardened it can easily be faced with gold. In incisors and cuspids, and often the bicuspids also, the amalgam should be cut away along the entire anterior surface, in order to avoid discolouration of that portion of the remaining tooth. In rare cases he first fills the anterior surface with gold, and finishes by the use of amalgam in that part of the cavity which presents itself on the lingual surface.

Among important advantages claimed are :

1st. The relative permanency of such work.

2nd. The economy of time, labour, and consequently of expense, to the patient.

3rd. Cavities may be filled in this way and no disagreeable and dangerous thermal effects follow, as would ensue if the cavity were filled with gold or amalgam alone.

4th. The pulp never dies under one of these combined metal fillings.

Thermal influences will account for the death of thousands of pulps under gold fillings, and this is the beginning of a series of events which result in abscesses.

5th. An improvement in the physical condition of the teeth follows when either of the above named combinations is used. Soft, frail teeth seem to become stronger and more dense in a comparatively short time when these fillings are used.

There is, therefore, more involved in this method of treating a certain class of teeth than the mere *mechanical adaptation* of the materials used and the *mechanical exclusion* of outside deleterious agents, whatever they may be.

In regard to the question of thermal influences, there is no doubt but that Robinson's foil is a better non-conductor than gold ; and this, he believes, coupled with the galvanic action set up by this combination, act beneficially. There can be no doubt at all that the combination of amalgam and gold, when placed in contact with the teeth and fluids of the mouth, will create an electric current. Micro-organisms cannot live in this current, and so such portions of the oral cavity are free from the chemical changes that result from the agency of these organisms. Approximal spaces are the dangerous points. Approximal cavities, filled with gold or other metals used alone, are very liable to prove short-lived, especially if the teeth stand in close apposition. It is to these spaces that we call the attention of our patients, charging them to be especially careful and thorough in cleansing. One of the generally observed phenomena, in connection with these fillings, is linked to its antecedents. And here, also, is the explanation of or ground for the hypothesis, that a dead pulp in a tooth so filled will not undergo that process of chemical change that results in abscess. Abscesses are held to be dependent upon the activities of a certain class of micro-organisms ; and this electric current is fatal to these organisms.

But in regard to the action of this electric current about the cervical borders of cavities, rendering them less liable to be affected by a renewal of decay, there results, in addition to the *mere presence* of the current, another antiseptic element, viz., the *product* of this galvanic action. The oxidation of the tin and silver that follows aids in rendering the space about such fillings antiseptic. The influence of this product, also, upon the immediately adjacent dentine is sufficient to render it less liable to be acted upon than is the tissue surrounding a gold filling. The tissues themselves are, therefore, to an extent rendered antiseptic.

There is, he believes, a *stimulating of physiological* function as a result of this galvanic current.

THE DENTAL REGISTER.

PYORRHŒA ALVEOLARIS WITH PRACTICAL CASES.

By J. L. Gish, M.D., D.D.S., Jackson, Mich.

Causes : Pyorrhœa Alveolaris may be hereditary, being due to a want of tone, or power of resistance in those tissues, that later on become the seat of disease ; or acquired by some *mechanical*, *chemical*, or *thermal* irritant. In heredity the form of inflammation is specific. This disease attacks equally man and woman, and appears generally about middle life. This disease may be the result of catarrhal troubles of the the throat and head. *Pathological Anatomy :* The changes vary according to the degree of the inflammation.

In this disease, come *first* the changes in the circulation ; and *second,* those in the adjacent tissues. Under the microscope, there is first a dilatation of the capillary vessels, the flow of blood being increased through the parts, but it is soon retarded, and the red corpuscles crowd together in masses, forming rouleaux while the *leucocytes* multiply and move very slowly along the walls of the vessels.

Stagnation of the blood stream follows, but while the stream of blood is slowed in its course, the red corpuscles accumulate in the arteries and the white bodies find their place in the veins, whose anatomical structure, namely, their thin walls, more readily admits of the escape of the leucocytes by their amoeboid movements into the surrounding structures. The red corpuscles also escape, there is also the transudation of the *liquor sanguinis*, forming the serous effusion.

The escaped leucocytes divide and multiply and also excite the tissues to increased cell-proliferation. This new cell-growth is very unstable and soon retrogresses. The pus dissolves both the *hard* alveolar, the dental organs, and soft structures.

This disease may extend to one or more teeth, from the adjacent structures, in one or the other jaw ; or in its more aggravated forms it may involve the alveolar arch of both jaws, with the final loss of all teeth implicated.

With the destruction of the alveolus, the cementum and dentine of the tooth structure are *necrosed* and absorbed.

Symptoms : The gums are red and congested, they have a soft boggy look and feeling, with more or less serous effusion. If the congestion be passive, the gums will be more or less purple. During the acute stages, there is pain. In the latter stages, the gums have an angry look, there is much infiltration of the surrounding soft structures, pus wells up from around the roots of the teeth.

The breath has a characteristic odour.

There is a bad taste in the mouth, (due to the quantity of purulent matter.) The tooth or teeth are found to yield under pressure, due to the breaking down of the proper support. There may be neuralgic pains in the face, head, arms, and chest. The taste is more or less destroyed.

Course, Duration, and Termination : It may last a few months, or years. Total destruction of the tissues involved may occur.

Treatment : Among the *strumous*, constitutional treatment should be employed. Calisaya, iron, and strychnine, or citrate of iron, or bark, iron, and hypo-phosphites of lime, are useful.

If the exciting cause be the deposits of calcarious matter upon and around the necks and roots of the teeth, it must be very gently removed with scalers, three-edged chisels : but care should be taken to avoid mutilation of the adjacent soft structures.

If chemical irritants, as mercury or fumes of phosphorus are the primary causes, the internal administration of chlorate of potassium, or turpentine, iodide of potassium, and bi-chloride of mercury may be tried.

To combat the inflammations, irritants must be avoided, and glycerine, belladonna, aconite, used. In the sub-acute we may use mild astringents as glycerine ʒj ; tannin grs. v ; or a solution of hydrastine and water, equal parts ; or nitrate of silver, grs. ij to water ℥j.

In the chronic form stronger anti-phlogistic remedies are needed. When suppuration is present we must employ astringents, antiseptics, and disinfectants. Removing the broken down structures to provide free drainage.

In this last stage of the disease, iodide of zinc and peroxide of hydrogen, fulfil the requirements for the astringent and disinfectant properties exceedingly well.

The antiseptic qualities are met by a mouth wash as follows : listerin, ℥ij ; oil of eucalyptus, gtts. x, and water f℥viij ; and a mouth or tooth power as follows : prepared chalk ʒvi, bicarbonate of soda grs. x, prepared orris root ʒij, and oil of wintergreen gtts. v. The mouth wash is directed to be used one-half to one teaspoonful into a quarter of a glass of tepid water, after each meal and at bedtime. The wash is held in the mouth from one to two minutes. The powder is used every, or every other, or every third night at bedtime.

Mode of administration of peroxide of hydrogen and iodide of zinc : A hypodermic syringe with a blunt needle is used for injecting the agents in solution, into the diseased pockets. The syringe being filled *first* with peroxide of hydrogen, and refilled if needed, the needle is passed gently into each diseased pocket and around the neck of each diseased tooth beneath the margin of the gum.

With the pockets yet filled with the solution of peroxide of hydrogen and its formed by-products, having washed out the syringe, re-fill it with a solution of iodide of zinc, two to five grains to the drachm of distilled water and again we pass the needle around and into all diseased pockets in the same manner as we did with the peroxide of hydrogen. When the two solutions come in contact, *iodine* is liberated from the zinc, and forms an aqueous solution of iodine, which is a non-irritant, and causes inflammatory products to be absorbed.

The applications are made every day, morning and evening, for one or two weeks, and as the disease disappears we lesson our number of treatments.

When we desire to remove, by slough, any part of the diseased structures and bring about a speedy resolution, it may be effectually accomplished by an application of Robinson's remedy, or equal parts of iodine crystals and creosote.

COMBINATION METAL FILLINGS.

By S. B. Palmer, M.D.S.

Dentine may be so poorly calcified that gold, however well manipulated, cannot prevent decay around the filling, because fluid circulation continues in the dentine ; decalcification and decay are the results, most assuredly, if acids are present in food or secretions.

And worse failure of proper adaptation, or defective manipulation, brings the normal teeth under the same law of decomposition. Thus, it may be seen that combination fillings may be a necessity to meet conditions where the ideal could not be produced.

Lining cavities under gold may often meet the requirements quite as effectually as to combine metals. The demand for compound fillings seems to call for something more than gold in cases where the dentine is not sufficiently dense to make a water-tight foundation for the filling, and to fill minute undercuts, scratches, etc., either too fine or inaccessible to be perfectly filled with gold alone. Gold linings for cavities—that is, one or two thicknesses of No. 4 foil, backed up with tin foil—seem to answer much better than a gold filling ; because—the gold being thin, is pressed into inequalities much as the tin would be without it. Tin also possesses antiseptic properties when brought in contact with dentine of quality below normal density, though not equal to amalgam in this respect.

He thinks tin can be used in sufficient thickness to withstand "electro-chemical action," say one-fourth or one-third of the plug, in which case the two metals would assume positive and negative relations; the battery thus established would become polarized and the action cease. Possibly there might be a groove in the tin at the line of union with the gold.

He will not deny amalgam, if used in a layer as thin as the tin linings mentioned, would not also be converted into sulphides and oxides of the metals and be washed away, although he thinks not. In connection with the gold surface there is perfect union, while the surface in contact with the dentine becomes a constant antiseptic, and the sulphide of silver, instead of being washed away, enters the dentine and thus neutralizes further electro-chemical action. There are reasons and conditions which invite the use of tin instead of amalgam, and its importance in aiding gold to preserve a class of teeth which alone it could not do is of sufficient importance to receive special attention.

"There are two distinct methods involved in the combination of gold and tin. Each will give positive results when specific conditions are observed. Any change of conditions leads to seeming contradictions. It applies to filling large cavities, generally in molars, as a substitute for amalgam, the object being to form an alloy of gold and tin by chemical action upon the surface of the filling. Such fillings resemble amalgam in colour and hardness, without either shrinkage or discoloration of the dentine. To obtain an alloy it is essential that the two metals be evenly distributed throughout the plug. There may be an excess of gold at any point without injury, but the tin foil must not exceed one or two thicknesses of No. 3, fcr the reason that the molecular action desired is limited or confined near the surface of the two metals in contact. An excess of tin greater than can be fused with the gold is chemically dissolved, leaving a corresponding furrow or pit in the filling.

"It should be borne in mind that this union or combination depends upon moisture. If it be upon the grinding portion, where the filling is self-cleansing, there seems to be a little difference from a first-clase tin filling, but on approximal, buccal, or lingual surfaces, especially where little care is bestowed, the surface of the plug becomes hard and indestructible, which renders this preparation of great value for submarine operations. He prepares the material for this filling by placing a sheet of No. 3 tin upon a sheet of No. 4 sheet of gold. This will usually fill a cavity. If thought to be sufficient, he cuts through the leaves and places the gold of one half upon the tin of the other, thus giving four thick, nessess, from which blocks or ribbons can be cut, the latter being rolled into cylinders. This preparation makes an excellent foundation for large gold fillings at the cervical borders of approximal cavities, where the matrix can be used as there is no danger that the tin will be dissolved by chemical action. Cutting the foil unites the edges and secures the position of the layers while packing.

"The second method is applicable for any filling in the posterior teeth, and much better than amalgam against frail, transparent walls of bicuspids. It possesses all the advantages of a gold filling in appearance through the enamel, as well as the benefits of tin in packing and closely adapting the gold to the dentine and enamel. Many gold fillings fail because the contact is not absolute when the filling is completed. Some patients are prejudiced against amalgam who would like to compromise, if possible, between the expense of amalgam and gold. The greatest benefit to the operator consists in the saving time. This method applied to teeth of normal structure, where there is no occasion for the anticeptic properties which are afforded by tin and amalgam; consequently the gold is intended to cover the tin, and, of course, the cavity would be lined with gold. The preparation of material is as follows:—Cut No. 4 gold into strips from three-fourths to one inch wide; also, prepare No 3 tin foil in the same manner. Roll the tin into a rope and untwist it, and this will leave a pliable roll of tin. Anneal the gold, taking care not to melt it. Place the gold upon a napkin and the roll of tin upon it; bring the edges of the gold up over the tin and lap them, and the tin will be completely covered. This may be used as cohesive gold. Pellets may be made by cutting the gold into squares of about one inch, and making a loose pellet of tin; anneal the gold and enclose the tin in it. With either rope or pellet, fill as much or little of the cavity as desired. Cohesive gold may be added to finish, and when properly done the appearance is that of a first-rate cohesive gold filling, and much better than the latter, as the gold is more perfectly pressed against the walls. One thing should not be overlooked when the tin has been used,—if cohesive gold is to be added, let the first piece be of one or two thicknesses of annealed gold, packed with an instrument of four well-defined points, by which the gold will receive a firm mechanical attachment to the tin foundation. If this be not done the gold covering is liable to be drawn from the tin, leaving it bear and non-cohesive.

"It is well to remove the gold from the pieces left after filling, because fresh annealing is necessary, and also because confusion might arise from allowing such foil to get mixed with that in common use.

Fillings of different metals must be arranged according to electro-chemical principles; otherwise good intentions may be attended with evil results. For instance, a gold filling may be patched or added to in any manner with amalgam, with good results, because no current leaves the two metals while they are in absolute contact; also, an amalgam filling may be cut away and the portion in sight covered with gold equally as well; while two such metals inserted in adjacent teeth may, and indeed often do, establish an electric current through the pulp and nerve-canals, notwithstanding it is claimed that tooth-bone is a non-conductor. This arrangement of fillings at times seem quite necessary, and by a little observation of the conditions the operator may pretty clearly learn his duty. If the opposite filling to the one to be inserted appears in good order and not liable to fail,—or, in other words, if the dentine is not sensitive to thermal changes,—no trouble need be expected from that source. Preparation of the cavity for the second filling will determine the course to pursue.

If the filling is to be of gold, the cavity deep, and dentine sensitive, a filling of gutta-percha is required for a few months.

Dental News.

IMPORTANT PROSECUTION UNDER THE DENTISTS' ACT.

At the Wisbech Borough Petty Sessions, Jan. 10, before the Mayor (Mr. J. T. Hiscox), the Ex-Mayor (Mr. F. Peatling), Mr. G. Dawbarn, and Mr. J. Leach, *Frederick William Bradley*, of the Castle Crescent, was summoned upon the information of Thomas Smith, solicitors' clerk, of 21, Bedford-row, London, for that he not being a legally qualified medical practitioner and not being registered under the Dentists' Act, 1878, unlawfully did take and use the name and title of dentist, or addition, or description implying that he is registered under the said Act, or that he is a person specially qualified to practise dentistry.

Mr. R. E. Melsheimer, barrister (instructed by Messrs. Bowman and Crawley-Boevey, solicitors, Bedford Row), appeared for the prosecution, and Mr. Waddy, Q.C., M.P. (instructed by Messrs. Sidney Ollard and Wilson) was for the defendant, who pleaded not guilty.

The case excited considerable interest in the town, and the court was filled by persons anxious to hear the proceedings.

Mr. Melsheimer, in opening the case, said he had to ask the Bench to convict the defendant under the third section of the Dentists' Act, 1878, which provided that certain persons should not be allowed to use the name of dentist or dental practitioner. The charge against the defendant was that he had unlawfully used the name and title of dentist. Now, there probably would be very little dispute about the facts of the case. Since the Act had been in force the provisions of it had become familiar to unqualified persons, and it was no difficulty to avoid using the title of dentist on the door plates and in advertisements, and he should show them that this was what defendant had avoided doing. He had not used the title in his advertisements nor on his door plates. It, therefore, became necessary to invite him to say what he was, and he had used it in conversation. In this conversation he had been asked the question "Are you a dentist?" and to this he had answered "Yes." He would not say on the one hand, that he had used the actual name of dentist or dental practitioner, but that he had been using the name within the meaning of the Act. It amounted to using the name in his profession, inasmuch as he led persons to suppose he was qualified to act as a dentist. If a stranger were to come into his place, and say before he committed himself to him, "I must ask you if you are a person fully qualified," and if to this he had answered "Yes, I am," he thought that that came under the section of the Act upon which they had proceeded. The question for the magistrates to consider was whether defendant had used the title in the way alleged by complainant. As he first said, the defendant had not used the title in any way in his advertisements. He found a notice of removal in the *Wisbech Advertiser* for Sept. 21st. (A portion of the advertisement was read.) He did not mean to use that fact against his friend Mr. Waddy.

Mr. Waddy: Then don't use it *for* me.

Mr. Melsheimer: I only want to—

Mr. Waddy: What connection has something that occurred in September to do with something that occurred in August.

Mr. Melsheimer said he was obliged to refer to it to put the case properly before the magistrates.

Mr. Waddy said he must claim to object to the advertisement being read. He could not admit of a statement made on August 13th as to the using of a certain name being proved by another circumstance which occurred on September 21st.

Mr. Melsheimer said he was going to prove that this title was used on August 13th, in order to show that defendant abstained from using the title publicly. The title of dentist was not mentioned in that advertisement, but he led people to believe that he was qualified. He did not propose to offer the advertisement to support the charge, but to explain the reason of bringing the case as it was, and to show that in the defendant's advertisements there was no use of the word dentist or dental practitioner. If the Bench desired him not to read the advertisement, he would not do so. He was not going to press that part of the charge; he was merely going to show the way defendant was acting at that time.

The Mayor: We don't think it necessary for you to read the advertisements.

Mr. Melsheimer said, then he would lay them on the table. He only meant to show that defendant avoided using the words. With regard to the manner in which the case had been instituted, it would be seen by the Dentists' Act, 1878, that a charge could not be commenced without the consent of the General Council. This was now no longer necessary, as that had been done away with by the Medical Act, 1886.

Mr. Waddy said he was not aware of the particular provision. It might be so, but he was not aware of it.

Mr. Melsheimer said that provision was repealed by the fourth section of the Medical Act, 1886, and it was no longer necessary to get the consent of the General Council to bring a charge of that sort. The case had not been instituted by private persons, but by the British Dental Association of qualified dentists, for the express purpose of preventing persons from doing this kind of work without being duly qualified, and for the protection of the public, so that they should not be operated upon by incompetent persons. The name of a fully-qualified person was entered upon the register of the association, but upon that register he did not find Mr. Bradley's name, therefore the conclusion was that Mr. Bradley was not a qualified person within the meaning of the Act.—Mr. Melsheimer then called the following evidence:—

John Henry Grimmett stated: I am a canvasser to a firm of surveyors, and live in London. On Saturday, 13th August, I went to the address of defendant, a chemist's shop at 41, Norfolk-street East. I saw defendant and said to him, "Are you Mr. Bradley, the dentist?" He said, "Yes." I was shown into a room, a kind of surgery. It was filled with chairs for the use of patients and there was a sort of mechanical affair that turned round. I saw some instruments in the room.

Mr. Waddy objected to the evidence; if the witness suffered from defendant's malpractices it would be a different thing.

Mr. Melsheimer said he was going to show that defendant practised as though he were a qualified man.

Witness continued: I said to defendant "My friend Mr. Loose has a tooth that requires stopping, and he would like you to see to it." My friend, who was with me, was asked to sit down, and did so, and was operated upon. I asked defendant if he was a thoroughly practical man and whether he extracted teeth? I said "I have a very bad set of teeth, and I thought of having them seen to, if you are a practical dentist, I might let you have the job." He said, "Oh, yes, I am, will you sit in this chair." I sat down, and he examined my teeth. He said, "I can make an excellent job of it. I should require to extract the back teeth, and I should cut off the fronts." He also said that he would willingly do it for me, and he would not mind doing it for nothing in return for a town testimonial. I asked him how much my friend had to pay, and he said "Half-a-crown," which I paid him. In the course of conversation, he told me that he had been trained at the London Dental Hospital. I heard a conversatien between defendant and my friend Mr. Loose, who asked him if there were any other dentists in the town. He said, "Yes, there is one man, but I don't think he is up to much," or words to that effect (a laugh.)

Cross-examined by Mr. Waddy : I did not quite gather what your usual occupation was before you embarked upon this last expedition ?

Witness: I am a surveyor's canvasser.

Mr. Waddy : A surveyor's tout.

Witness : The name of my firm is Cook, Baines, and Ball.

Mr. Waddy : I should like to know a respectable firm of surveyors who employ a tout. I suppose they are not only surveyors but are purveyors of information to dentists.

Witness : Mr. Ball asked me to come down to Wisbech. He paid my expenses. I don't know Mr. Thomas Smith, of Bedford-row, who laid the information in this case. I know the solicitors, Messrs. Bowman and Crawley-Boevey.

Mr. Waddy : Did you say Bowman and Crawley-Bogie (a laugh).

Witness: No, Bowman and Crawley-Boevey. I have not been similarly engaged before. Mr. Ball asked me to come down and ascertain if Mr. F. W. Bradley announced himself as a dentist. Mr. Ball paid my expenses. I did it in my spare time to oblige Mr. Ball.

Mr. Waddy : For the love of it, I suppose (a laugh). I don't understand it ; you say you are employed by Messrs. Cook, Baines, and Ball, yet you do this sort of thing in your spare time.

Witness: My duties are not defined, but I have an idea what they are. It was a Saturday when I came down to Wisbech. Saturday afternoon is a holiday, and I came down partly in the firm's time and partly in my own time. I left King's Cross in the morning at 10.10. I made a note of the conversation I had with Mr. Bradley about his qualification as a dentist. I haven't it with me, and I don't know where it is. In the week after I came to Wisbech in August I gave Mr. Ball an account of the conversation with defendant. Mr. Loose, my friend, is in the same office as I am. He is not a surveyor's canvasser. The firm are valuers as well as surveyors. Mr. Ball is not here to-day.

Mr. Waddy : Then what earthly interest has Mr. Ball, of London, a surveyor, with a dentist down here ?

Witness : I don't know. I did not give Mr. Ball a copy of the minute that I made of the conversation with defendant. He requested me to go to the office of a solicitor in Wisbech and make an affidavit after I had seen defendant, and I did so. I believe the name of the solicitor is James, but I can't remember where his office is situated. Mr. Ball instructed me to go and make the affidavit.

Mr. Waddy : Ball again!

Witness : I saw Mr. James. I think his name was James, but I can't say positively.

Mr. Waddy said it seemed to him that not only had somebody been acting as dentist without being qualified—at least so his friend said—but somebody else had been acting as solicitor without being qualified.

Cross-examination continued : My services for the firm with this one exception have been for their business as surveyors. I did not give a written statement to Mr. Ball. He took it down from what I told him. He took it from my mouth. I did not make a personal memorandum.

Mr. Waddy : Then I misunderstood you. I should like to see that minute, as it would be interesting having been made so far back as August last.

Witness : I can't explain how it is that the information in in this case has not been laid till recently.

By the Magistrates' Clerk : Mr. Ball said to me, "I should like you to go to Wisbech and see a man named Bradley there, and try and find out whether or not he is practising as a dentist." He also told me to go to a solicitor and make an affidavit. He gave me the name and address of the solicitor to whom I was to make a statement of what defendant said. He did not say anything more.

Mr. Waddy : Then your whole instructions were to come down here and find out what Mr. Bradley called himself?

Witness : Yes.

Mr. Waddy : Why did you not ask him what he was ?

Witness : I did so.

Mr. Waddy : Why did you not ask him what he called himself, instead of laying a trap ?

Witness denied laying a trap ; he acted according to his instructions.

Re-examined by Mr. Melsheimer : There was no contract with anybody as to my coming down here in August, and I was not to receive any remuneration for what I did. My only instructions were to come down and find out whether Mr. Bradley was practising as a dentist.

Mr. Waddy : And he did it all for the love of the thing (a laugh).

Witness : My travelling expenses were paid by Mr. Ball.

The interview with the solicitors to the Dental Association took place on the same day on which I saw defendant. I made a statement to one of the firm at that time.

Mr. Waddy said if there was an affidavit in existence, he was entitled to see it, and he now asked for it.

Mr. Melshemimer said an affidavit was privileged, and he objected to its production.

Mr. Waddy said that when once an affidavit had been sworn to, it became public property.

Mr. Melsheimer said that a copy of the affidavit had been forwarded to the magistrates' clerk for the purpose of preparing the information, but he contended that, being simply part of the instructions, it was privileged.

Mr. Waddy said he must say that he was astounded that such a document should be kept back. He saw a copy of the affidavit lying on the table before him, and he asked to be allowed to see it.

Mr. Melsheimer said he objected to the document being produced, as being founded upon a converstion, it was privileged. This case might go elsewhere, and he should not like it to appear on the clerk's notes that he produced the document, which would be a ridiculous thing on his part. He did not object to the Bench seeing it.

Mr. Waddy said, then he came to this—that his learned friend did not object to the minds of the magistrates being influenced by a document which he declined to allow him (Mr. Waddy) to see. If the magistrates' clerk said the document was privileged, he would sit down and say no more about it.

The Magistrates' Clerk said the document was there, and so far as he was concerned Mr. Waddy could see it.

Mr. Waddy said he claimed a right to have it.

The magistrates' Clerk asked if it was worth while to contest the matter any further?

Mr. Melsheimer said he only pressed the objection on this ground—if the case went against him, and he appealed to a higher Court, he should not like it to appear on the clerk's minutes that he assented to the document being produced.

The Magistrates' Clerk said he did not think it would make any difference to the case.

Mr. Melsheimer made no further objection to the production of the document, and

Mr. Waddy then said there must not be any mistake about the document; directly he got hold of it he should make use of it.

Frederick Loose stated: I am a Clerk in the employ of Messrs. Cook, Baines & Ball. Mr. Ball asked me to come to Wisbech, and I came with the last witness on the 13th of August. I went with him to the defendant's place of business in Norfolk-street. We were shown into the consulting-room, and I overheard the conversation between the last witness and defendant. Grimmett said, "Are you Mr. Bradley, the dentist?" Defendant said, "Yes." Grimmett then said, "I have a friend who has a tooth that wants stopping. Defendant asked me to take a chair, and I sat down. He stopped the tooth. Grimmett said, "I have a bad set of teeth; will you kindly examine them?" He did so, and said he should have to extract the back teeth, and he thought he should have to cut off the front ones. Defendant said he would not object to doing it free of charge to get a London testimonial. We had previously said that we came down from London. I heard the Dental Hospital mentioned; defendant said he had practised there. I said, "I suppose you are the only dentist about here?" and he replied, "Well, there's another man, but I don't think he knows much about dentistry."

Mr. Melsheimer; Was the stopping effective?

Witness: No.

Mr. Waddy said that if his friend was going to produce evidence of that sort of thing, he should prove by the testimony of some of defendant's clients that he was a thoroughly competent man at his business.

Mr. Melsheimer said he would withdraw the question.

Witness, in cross-examination by Mr. Waddy, said: I am in the same office as Grimmett. When I came to Wisbech on the 13th of August, it was the first time I had been on an errand of that kind. Mr. Ball has no interest in the matter that I know of. I made a joint affidavit with Grimmett. When we went to defendant's Grimmett first used the word "dentist," I used it afterwards.

Mr. Waddy: Then defendant did not use the word "dentist" at all.

Witness: No, he did not.

Mr. Waddy: Did you notice outside the shop door, not the word "dentist," but the letters "A.P.S."

Witness: I saw a plate of some kind, but I did not notice particularly what was on it.

Mr. Waddy: But surely you noticed it; you came down on purpose to find out what he was.

Witness: I saw a plate, but I did not notice what was upon it, I did not get defendant's card.

Mr. Waddy: Then am I right in saying that you did not see a card, an advertisement, or anything in which defendant has ever described himself as a dentist?

Witness: No.

Mr. Waddy: Then I won't ask you anything more.

Thomas Smith stated: I am clerk to Messrs. Bowman and Crawley-Boevey.

Mr. Waddy: The surveyors?

Witness: No, the solicitors, of 21, Bedford-row.

Mr. Waddy: There was a Boevey in the Surveyors' names.

Mr. Melsheimer: That was the name of the solicitors; the names of the surveyors are Messrs. Cook, Baines, and Ball.

Mr. Waddy: I will see about it.

Mr. Melsheimer: See about it!

Mr. Waddy (to witness): From whom did you get your instructions.

Witness; From Messrs. Bowman and Crawley-Boevey.

Mr. Waddy: What particular gentleman of the firm instructed you; they did not all three speak to you at once.

Mr. Melshemier: There are only two members in the firm.

Witness: Mr. Ball instructed me.

Mr. Waddy: Do you know Mr. Ball?

Witness: I have seen him.

Mr. Waddy: On this subject?

Witness: Only on one occasion.

Mr. Waddy: When was it?

Witness: On last Saturday, never before.

Mr. Waddy: Now can you tell me what interest Mr. Ball has in this affair, and what made him act in the matter?

Witness: I don't know.

Mr. Waddy: You are the person who made the affidavit?

Witness: Yes.

Mr. Waddy: Where did you get your intelligence from?

Witness: Messrs. Bowman and Crawley-Boevey saw me and said that the British Dental Association had taken the case up.

Mr. Melsheimer: That is the case for the prosecution.

Mr. Waddy said it appeared from the evidence of the witness that the charge was brought against the defendant by the British Dental Association. That might be a matter for observation.

Mr. Melsheimer: Messrs. Bowman and Crawley-Boevey are solicitors to the British Dental Association.

Mr. Waddy: How am I to know that?

Mr. Melsheimer: I can call a gentleman who is in court to prove it.

Mr. Waddy: That is the very reason I asked you if you had finished your case. If you have got anybody you can call him.

Mr. Melsheimer; I have closed my case.

Mr. Waddy said Mr. Melsheimer had said that the prosecution had been instituted by the British Dental Association. He must ask that gentleman not to interrupt him again in his remarks. He would say that Messrs. Bowman and Crawley-Boevey were solicitors to some Dental Association, and he had no doubt were solicitors to a great many people besides.

He characterised the action in bringing that case as one of the shabbiest he had ever known brought before in his life. He preferred to say the case was one brought upon the statement of a solicitor's clerk, and entirely apart from the British Dental Association. They had before them a gentleman against whom a charge had been brought. This gentleman had been resident in the town of Wisbech for some time, how long they knew better than him. This was a penal Act, in which he could not call the gentleman himself. There were two hired witnesses from London to prove an offence against this gentleman.

Mr. Melsheimer: I protest against the witnesses being called "hired."

Mr. Waddy said he was right in what he said. The witnesses did it on their own time and they had that time given to them. They were not children. He was hard upon the two people coming down from London to carry out their plots. They were mean and contemptible actions and the arguments in their favour would not hold water for a single moment. The Act was to prevent persons from practising if they were not fully qualified. It was not to stop a man from practising his trade just because his name was not on the register of an association formed of members of that profession. There was the Act which said not only would the man not be allowed to use the words "dentist" or "dental practitioner," but the words "or any such title" were added. He found from another clause that beside this, the man would not be able to sue for the recovery of any debt due to him for work done in the following of his profession. They might tell him that the Act was not to stop the man from working, but if a man was told that he might do the work, but must not expect to be paid for it, he thought a circumstance of that kind would pretty nearly stop him. Let them consider if Mr. Bradley had brought himself under the limit of the Act. First let them look at the offence. It was said that he was not fully qualified to practice as a dentist. He had performed one operation for which he had charged two shillings and sixpence, a very low charge; he himself had on several occasions paid a much larger sum for a similar operation. He was prepared there that day to say that Mr. Bradley was fully qualified to practice, and the grievance was not that he could not practice, but that he could practice a great deal too well for some of them. What could the Act do with him but stop him from putting on his brass-plate, or on his business-cards, or in his advertisements his name as a dentist? For this reason in the Act the word "dentist" was put in inverted commas, so that it was presumed that owing to his not being a member of the Society of Dental Surgeons, he would not be allowed to stick at the end of his name the word "dentist" or "practitioner" or any such words. He did not see why this should be any crime, for the man might if he chose add a long list of his ancestors who were born with a set of teeth in each hand, to the end of his name. This would have no reference whatever to the case, but it would come under this head. What did they show in that case? The man did not use the words at all; they were taken to him and used for him. Mr. Bradley did not use the words, but a trap was laid to make him use them. Let them take an instance and say—go to a man of the name of Smith, which was a very common name. There was Mr. Smith, the draper, Mr. Smith, the grocer, and Mr. Smith, the dentist, he would say so, merely as a matter of identification of his individuality, when spoken to by a person whom he had never seen before. The Act was a penal one, and it ought not to be extended in the manner in which it had been done. Mr. Bradley had not taken the name of dentist, but had been trapped into it. The charge which had been brought against him was simply for an offence committed in conversation.

The word had been used in conversation only. He had not told it out publicly, and the information was simply upon that point, and from it he was charged with taking and using the title of "dentist" in his profession. Let them think for a moment and look at the evidence, which was most remarkable. On the 13th of August, the two witnesses came down to Wisbech, but his client knew nothing about it and heard nothing until the 4th of January.

Mr. Melsheimer : I must explain--

Mr. Waddy (continuing) said they knew that in August a communication was sent to London. It was sent to those solicitors. One of them got hold of Mr. Ball, the Surveyor. he found to his hand a canvasser whom he sent down to Wisbech to interview Mr. Bradley. This canvasser came down, and in order that he might be properly armed, a witness was found to accompany him, from the same office. He wished the office luck in possessing two such gentlemen with tastes in that direction. This case was complete on August 13th, and an affidavit was sworn within two or three days.

Mr. Melsheimer : On the same day.

Mr. Waddy said then it was all completed on that day. Just let them think for a moment what it meant. They had got their case ready, but no move was made in the matter. The man who was carrying on the prosecution, and who had brought the case before them, had not called one single human being in Wisbech to show that he had used the name, and this case had not been heard of for months. There could not be a single advertisement produced in which defendant had called himself a dentist. He had a large business, and many persons had availed themselves of his services. They could not produce one single advertisement of that man's in which he had brought himself under the Act. Mr. Bradley had not put upon his cards or brass plates that he was a dentist, he had called himself nothing besides "A.P.S," which they were well aware meant Associate of the Pharmacsutical Society. If they questioned that, he had his diploma in a nice black frame to prove it, and he was prepared to show them it was with far more readiness than his friend allowed him to see the affidavit (laughter). If his learned friend desired to prove a quasi-criminal case, his argument had failed just at the important point ; he should have followed his case to the hilt. When they found that Mr. Bradley would not incriminate himself, they got Mr. Loose and his friend to go down and incriminate him. He was quite surprised when he heard the evidence. He expected the witnesses were going to say that Mr. Bradley had said, "I am a dentist." He then thought there was something to come on the second point, but he was again disappointed. What he could not understand was the long period which elapsed between the completion of the case and the commencement of the action. If his learned friend had not been instructed before, it was because the prosecutors did not move because they saw they had no case, but if his learned friend had been instructed early, and it was by his advice that the delay had occurred, then he was at fault.

The Magistrates' Clerk said there was no doubt that the wording of the Act must be construed literally.

Mr. Waddy said, then that settled his case.—The learned gentleman immediately resumed his seat.

The Magistrates retired to consult, and after an absence of twenty minutes returned into court.

The Mayor said the magistrates had carefully considered the case, and they were of opinion that defendant had brought himself within the provisions of the Act. They had decided to fine him £5, with the usual court fees, and expenses of witnesses.

M. Waddy said he should have to ask for a case to be stated for the High Court of Justice.

Mr. Melsheimer said Mr. Waddy could give the usual three days' notice.

Mr. Waddy said he would give verbal notice now; he was entitled to do that.

It was understood that a case would be granted, and that the requirements of the Act in this respect would be complied with.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

40, Leicester Square, E.C.

The Annual General Meeting was held on Monday, January 9th, at 40, Leicester Sq., W.C. Business: Election of Officers.—Papers by Mr. A. S. Underwood, on "Erosion in connection with some points in the Minute Anatomy of Enamel."—Mr. S. J. Hutchinson, on "A Note on Erosion."

R. H. WOODHOUSE, } *Hon. Sec.*
WILLOUGHBY WEISS, }

ODONTO-CHIRURGICAL SOCIETY.

THE Third Ordinary Meeting of the Odonto-Chirurgical Society (Session 1887-88) was held in the Rooms, 30, Chamber Street, Edinburgh, on Thursday, January 12th, at 8 p.m. W. H. Williamson, M.D., President, in the Chair. Private Business: Nominations. General Business: The meeting was a conversational one, and among other Casual Communications, the subject of Cocaine, with regard to its use in Dental Operations, was introduced by Messrs. Watson and Amoore.

JOHN S. AMOORE, *Hon. Sec.*

ODONTOLOGICAL SOCIETY OF VICTORIA.

THE Ordinary Monthly Meeting of the Odontological Society was held on Thursday, August 4th, at Melbourne.

There was a good attendance. It was decided to obtain certain current periodicals for the use of members of the Society, also to provide suitable accommodation for the arrangement of the specimens belonging to the Society.

Mr. Cumming exhibited some teeth from the skull of an aboriginal showing signs of caries. Mr. Thomson exhibited a collection of typical and abnormal teeth. Mr. L. A. Carter, D.D.S. read a paper on "Sensitive Dentine," relating his experience with Cocaine, Aconite, &c. A lively discussion followed.

An Ordinary Meeting of the above Society was also held on Sept. 1. There was a large attendance. It was decided to again interview Dr. Rose with a view to hastening the passing of the Dental Bill. Some casual communications were received, after which Mr. F. C. Carter read a paper on "Regulating Teeth" and exhibited some original appliances used for that purpose. The paper was fully discussed.

GEORGE THOMPSON, L.D.S., *Hon. Sec.*

APPOINTMENT.—Mr. Adolphus B. Alexander, L.D.S., Eng. has been elected Dental Surgeon to the Good Templar and Temperance Orphanage.

VACANCY.—National Dental Hospital, Great Portland Street. The post of House Surgeon and Anæsthetist are vacant. Applications by the 27th instant.

ERRATUM.—Page 9 instead of 1064 read 1164.

British Journal of Dental Science.

No. 481. LONDON, FEB. 1, 1888. Vol. XXXI.

ON SOME CASES OF CONGENITAL FISSURES OF THE MOUTH.*

By J. Bland Sutton, F.R.C.S.,

Honorary Member of the Society; Hunterian Professor Royal College of Surgeons, England; Assistant Surgeon, Middlesex Hospital.

In 1867, Sir William Fergusson,† in his well-known lecture on Hare-lip and Split Palate, states, "that hare-lip in the human subject bears no resemblance to that of the hare. In this animal it is invariably in the middle line, in man it never is." Among the many cases which this surgeon saw, none were in the middle line.

Mr. Holmes,‡ commenting on this statement, amends it thus:—

"The natural cleft in the lip of the hare differs from the unnatural cleft in the human lip in the important particular of being in the middle line, which the human hare-lip never is, or so rarely that it may practically be said never to exist."

It is also equally noteworthy that in hare-lip occurring in mammals the cleft is commonly situated to the right or left of the median line; in the slink-calf shown in the preparation, the cleft is on the right side.

A similar condition is present in the lip of the lamb presented to the Museum of the Odontological Society by Mr. Willoughby Weiss. In this specimen the fissure is on the right side. Although one would imagine hare-lip to be fairly frequent in the lower mammals, to judge from its prevalence in the human kind, nevertheless the two cases just mentioned are the only actual specimens I can refer to at the present moment, and no other recorded cases are known to me.

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* A paper read before the Odontological Society of Great Britain.

† Lectures on the Progress of Anatomy and Surgery.

‡ "Surgical Diseases of Childhood," 1868, p. 94.

Median hare-lip, however, occurs in the human subject, and the specimen for which I am deeply indebted to the courtesy and kindness of my friend, Mr. Frederick Treves, establishes this beyond all doubt.

The case occurred in a baby which survived its birth several weeks, and the cleft is truly median. In addition to this, the eyes were affected with coloboma, the right eye presenting other serious defects.

On examining the child before its death, I felt convinced that there was no ethmo-vomerine plate, and this conviction was strengthened by the peculiar shape of its forehead. When the child died, this opinion was fully confirmed ; there was no ethmo-vomerine plate, consequently no nasal septum, and, what is more important, the premaxillary bones were absent. The bearing of this peculiarity will be recognised when we come to discuss the embryological features of these fissures.

In the summer of 1886, whilst staying in Paris with my friend, Mr. H. W. Freeman, of Bath, we noticed some pug dogs, kept as fancy pets, with remarkable clefts in the upper lip and nose. A bitch was purchased, and at Bath Mr. Freeman had her crossed with a Skye–terrier. The result was successful : half the pups presented well-formed lips and noses, the other half had cleft noses like the mother.

The deformity consists of a median vertical split involving the upper lip, extending some distance between the nostrils, and passing between the incisive bones, opens on the hard palate.

The defect is of great interest ; for median hare-lip is excessively rare, and even in the hare the mesial cleft is confined to the lip, and does not involve the nose. It is also interesting, in that it serves as a good example of a defect being transmitted until it becomes an established condition. It is very difficult to explain, on the ordinarily received opinion regarding the development of the nose and upper lip, how this defect comes about. An examination of the lip of a normal dog, however, shows that the cleft, or cicatrix, present in the dog's upper lip, extends some distance along the nasal septum. Hence it is possible that we have in this case to deal with an arrest of the coalescence which normally takes place in this situation.

Equally rare is median fissure of the lower lip, not only in man, but in mammals. Sir William Fergusson[*] figured an example of this defect, the only one he ever saw in his exceptional experience of these cases.

An excellent example of median fissure in the lower lip, involving the symphysis and tongue of a calf, has been placed on record by Dr. Joseph Walker.[†] A very remarkable specimen is recorded by Lannelongue.[‡] It was observed in a child, two years and a half old. The split involved the lower lip, and between its edges a tumour existed. This was removed, and the edges brought together. The lower incisors were natural.

Judging from the figure accompanying Lannelongue's account of the case, it would seem to be a dermoid, and of that variety to which I have applied the term sequestration cyst.

Before proceeding to discuss some points connected with the development of the parts under consideration, we must study yet another example of abnormal fissure, viz., *macrostoma*. This congenital defect is due to failure of union, partial or complete, of the mandibular fissure beyond the natural limits of the mouth.

Through the courtesy of Dr. Rayner, and the kindness of my friend, Mr. John Palmer, I have been able to study and exhibit a remarkable specimen of this rare defect.

In this instance the child, when born, was found to possess an unusually large mouth, the angles of which gradually passed into a red cicatrix. This scar in its turn ended in a gaping recent wound over the temporal region extending to the dura mater. The condition was symmetrical. It survived its birth six weeks.

The impression left on the mind of those who saw the case was, that the injury had been caused by a tight amniotic band engaging the mouth at the time of birth and impeding delivery, especially as the nurse's attention had been arrested by a strong cord-like piece of amnion. This opinion, however, cannot be entertained; in this case we have to deal with an example of incomplete coalescence of the mandibular cleft. The scar-like line radiating from the angle of the abnormal mouth, resembles the red cicatrix occasionally seen in the line usually followed by a hare-lip.

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[*] "On the Progress of Anatomy and Surgery," 1867.

[†] Odontological Trans., 1887, p. 141.

[‡] "Traité des Kystes Congenitaux." Paris, 1886.

The recent wound on the side of the child's head is difficult of explanation, and probably has no connection with the deformity, and is best regarded as arising from accident during parturition. In the recent condition, the base of the seam was formed by a dense fascia, which strongly resembled the temporal fascia, but after death, and especially after the parts had been much desiccated by alcohol, the outlines of the cerebral convolutions could be distinguished.

The present specimen differs from the few others that I can find recorded, in two points. Thus at the spot where the mouth should terminate normally, small cutaneous processes usually exist, but they were absent in my case. Secondly, in the majority of the cases the defect is associated with supernumerary auricles. For an interesting account and reference to the literature the following may be consulted :—Morgan, "Medico-Chir. Trans.," vol. 65, p. 12, and Rushton Parker, "Liverpool Medico-Chir. Journal," January, 1886.

The specimen of macrostoma just described is an extreme example of that defect. Recently, through the kindness of Mr. G. Seymour, an opportunity has been afforded me of studying a very interesting instance of what may be considered the mildest form of the defect. The patient, a little girl aged seven years, presented on the right side of the cheek, an inch and a half behind the angle of the mouth, a small depression surmounted by a tiny cutaneous nodule. The depression in the skin was about one-sixteenth of an inch deep. Corresponding with this on the mucous membrane of the mouth was a white cicatrix one-fourth of an inch in diameter.

On the left cheek, an inch and a half behind the angle of the mouth, is a small congenital cutaneous elevation. The pinna on this side is very defective, and as far as my examination extended, the external auditory meatus is covered with skin ; but I do not think the meatus is completely occluded, because the girl has some hearing on that side.

The case is one of extreme interest and, may be interpreted as follows :—

The dimple in the right cheek and the nodule in the left one result from the faulty closure of the edges of the mandibular cleft, in the same way that imperfect coalescence of the branchial fissures leads to the formation of cervical branchial fistulæ.

Macrostoma is, as has already been mentioned, frequently, but by no means always associated with defects of the auricle. It is of great interest to find in this case, the defects in the line of the mandibular cleft associated with an abnormal auricle.

As far as any knowledge of the literature of this subject extends, this is the only recorded case of a congenital depression in the cheek allied to branchial fistulæ.

Some amount of new light appears to have been shed on this matter by His's careful investigations into the anatomy of early human embryos.* This writer's account is somewhat after this fashion :— The mouth in a human fœtus of the fifth week is represented by an opening from which five fissures radiate. The upper pair are the orbito-nasal, the two lower form the mouth, whilst the median fissure separates the lower jaws. As the median process develops to form the nose, two rounded prominences make their appearance at each angle. These may be referred to as the globular processes From the globular processes the alæ of the nose and intermaxillæ are derived; later they are joined by the lateral pieces to complete the lip.

He further points out that in some mammals, especially the rodents, the globular processes do not fuse together, but are permanently separated; whereas in man they always fuse together in the middle line, but are not so constantly joined by the lateral pieces.

These facts are of value, inasmuch as they afford a ready explanation of the occurrence of median hare-lip in the lower mammals, but its extreme rarity in man. When it occurs in man it is due to an arrest of development of the globular processes. Hence we may fairly infer that in the variety of pugs, the globular processes habitually fail to coalesce in the median line. It is open to question whether the globular processes owe their origin entirely to the fronto-nasal plate. The case of median fissure described on page 102 would seem to show that the premaxillæ arise in connection with the ethmo-vomerine plate, and that the skin covering them is derived from the fronto-nasal plate; for in that specimen the alæ nasi are well-formed, but the premaxillæ and septum are absent.

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* "Anatomie Menschlicher Embryonen," Heft. iii, 1885.

Whilst engaged in preparing this paper a case of considerable interest in connection with it came under my notice. In the case of the dog with the split nose it will be observed that the split is not confined to the lip, but involves also the anterior part of the hard palate. The remainder is normal. Hare-lip in man is not necessarily accompanied by a split palate, but if cleft palate is associated with hare-lip, the cleft involves the entire palate. If His's view concerning the globular processes is correct, then it would be expected that hare-lip could be associated with a cleft involving only the premaxillary bones.

The case in question supplies the answer. A lad aged eighteen came under my care with a hare-lip on the left side. An examination of the alveolus shows clearly enough that a fissure half an inch deep occupies the left maxillo-premaxillary suture, and separates the canine from the lateral incisor.

Whilst studying these abnormal fissures about the mouth, a marsupial embryo (*Macropus*), which could only have been in the pouch two or three weeks, came under my notice, and the condition of its mouth is so interesting that I have had it drawn. It presents a median cleft in the upper lip, which differs from the hare's cleft in that it involves the premaxillæ exactly as in the case of the dog. Further, there is a shallow median fissure in the lower lip. A similar condition exists in the lips of all early marsupial embryos I have been able to examine (*Macropus*, *Halmaturus*, *Phalangista*, *Petrogale*).

Summarising the cases discussed in the preceding pages, it may be briefly stated that the fissured lip of the calf and lamb are the result of non-coalescence of the globular processes with the lateral bars which form the lips and maxilla. This of course applies to such cases in man. The fissure in the lip of the hare is due to the non-coalescence of the globular processes with each other, an event quite normal in this mammal, as in rodents generally; in the case of the pug, with median cleft in the lip and nose, the failure of union between these processes is a defect hereditarily transmitted.

Macrostoma is due to failure of union in the posterior part of the oral cleft, whilst the median cleft in the lower lip, an event of very rare occurrence, is due to some cause preventing the mandibular bars from fusing in the median line. Finally, it rarely falls to the lot of any surgeon to be so fortunate as to have so many unusual fissures about the mouth come under his notice in the short space of eighteen months.

MEDICAL CLINIC OF AMSTERDAM.

Case of hemiatrophy of the tongue with paralysis of the left side of the palate, atrophy of the left sterno-cleido-mastoid and trapezius muscles and paralysis of the left recurrent nerve.

Under the care of PROFESSOR P. K. PEL.

ALTHOUGH we find here and there a description of a case of unilateral atrophy of the tongue (Ballet, Erb, Raymond and Arland, Hirt, Remak), the instances of this singular affection are yet so rare that it is very desirable to increase our record of such cases. The following one, which was under my care shows a combination of morbid symptoms which appear to have hitherto been but very exceptionally met with, and for this reason alone a short account of it would not appear to be without value.

T. R., a shopman, aged 34, was brought to me at the medical clinic in this city, on May 18th, complaining of pains in the head and neck and difficulty in swallowing.

Previous history: In his youth he suffered from rickets and had measles; in 1884 he had gonorrhœa, which was followed some weeks afterwards by pains in the head and limbs, general lassitude and loss of hair. He does not remember having had any cutaneous manifestation. Though often languid and tired he yet remained comparatively well till the beginning of 1886. About this time general difficulty of swallowing set in, which often induced regurgitation of liquid food through the nose, and his voice began to acquire a nasal clang. Soon after this, towards the beginning of May 1886, he began to suffer from violent pains in his neck and the back of his head, which were almost unbearable at nighttime. He never slept at night, his appetite began to fail, the movements of his head and neck became very much limited and exceedingly painful, and he began to feel very unwell. In this sad plight the patient sought help in our clinic on May 16th. There does not appear to be any hereditary predisposition to any disease. Indulgence in spirits is denied. No lead poisoning.

The examination of the ill-fed and anæmic patient showed, besides the symptoms to be referred to by and bye in connection with the tongue, great tenderness and stiffness, about the neck. Movements were so restricted that a satisfactory examination in the sitting posture was hardly feasible. Temp. normal, morning 37°c, evening 37°.4c., Pulse 80, regular weak, Respiration 20. Nothing abnormal was found in connection with any organ; the lymphatic glands generally in a state of indolent swelling; the spines of both tibiæ uneven, the head bald.

The violent pains in the head and neck disappeared in a few days, under the use of iodide of potassium (1½ to 3gr. a day); on the 18th May the condition was bearable. and by the 24th he was so much improved that it was possible to make a complete and careful examination of him in the erect posture. The result of the examination is worthy of record, and was as follows :—

As soon as he puts out his tongue the whole organ moves towards the left; the tip then becomes hoisted towards the left; as soon as it is withdrawn, and it lies on the floor of the mouth, the tip points to the right, so that the raphe of the tongue appears to be twisted to the right, and the left half the organ seems to be narrowed. Towards the middle of the tongue, the distance between the septum and the left border is 1.9 centim. Whereas on the right it is 2.8 cent. The left half of the tongue is only half as thick as the right (0.75 cent. to 1½).

Voluntary movements of the organ to the right and forwards are almost altogether lost—the base of the tongue *in toto* is a little twisted to the right—the tongue can be moved downwards, upwards and backwards almost as well as in the normal state.

Palpation of the organ with the thumb and forefinger shows the consistency to be very much diminished, so that, the left portion of the tip feels quite soft and limp, while the right is firm and hard.

No loss of taste for sweet, acid, alkaline or bitter, and no loss of tactile sensibility.

No increased flow of saliva. Mastication and deglutition normal. No return of fluid through the nose when drinking. Voice clear and with a nasal twang. Articulation unaffected. Some loss in the reflexes of the left side. Facial muscles of expression quite free in their movements. Lips not affected

Muscles of the floor of the mouth equally developed on either side.

On examining the pharynx, the left side of the palate and left pillar of the fauces are found to be paralysed. The uvula is drawn somewhat to the right, the left half of the velum is not so high and less stretched, the distance between the arches of the palate is increased, there is no loss of sensation, and the reflexes are very strong.

Though the trigeminus and motor nerves of the ocular muscles show nothing abnormal, (no reflex affection of the pupil), yet on further examination we find a considerable atrophy of the left sterno-cleido-mastoid and trapezius muscles, and the laryngoscope also shows us a paralysis of the left recurrent nerve (cadaveric position), with complete retention of sensibility in the larynx, as the exploration with the laryngeal probe shows, the rima glottidis in an oblique position. Voice almost clear.

No subjective or objective symptoms connected with the medulla. The most careful exploration for tabes gave a negative result. The tendon reflexes however are absent on either side.

Urine (1500 to 2000 centm. Spec. grav., 1010, 1016, no albumen or sugar).

The electrical examination showed no signs of degeneration, nothing but a slight loss of electrical irritability of the muscles and nerves on the affected side.

The subjective symptoms soon disappeared under the continued use of iodide of potash. But the objective symptoms in the tongue pharynx, throat and larynx remained unchanged. The patient was discharged from the clinic on the 10th June in exactly the same condition as above described as far as objective signs.

I had an opportunity of seeing this patient again last January. He felt perfectly well and complained of nothing whatever. The objective examination gave exactly the same result as before. The atrophy of the left sterno cleido-mastoid and trapezius muscles appeared, however, to have somewhat improved. Absence of tabetic symptoms. Total loss of tendon reflexes.

In this case we have to deal with a syphilised man in whom most likely in the course of a few months there developed 1st. Atrophy of the left side of the tongue (left hypoglossal nerve). 2nd. Paralysis of the left side of the palate (internal branch of the accessory branch of the vagus). 3rd. Atrophy of the left sterno-cleido-mastoid and trapezius muscles (external branch of the accessory nerve). 4th. Paralysis of the left vocal cords (left recurrent nerve).

Professor Pel then discussed at length the localisation of the diseased process in this case. The nerves affected were evidently involved either at their periphery in some spot where they lie close together; or, in the base of the brain, or thirdly, in the medulla. After giving his reasons against the two first hypotheses, the Professor expressed the opinion that the affection really depended upon a form of disease of the bulb affecting the two nuclei of the hypoglossal nerve, and sundry nuclei of the left vago-accessorius. This assumption was supported by anatomical position of the nuclei of the hypoglossal and vago-accessorius nerves in the lower angle of the fourth ventricle. Turning to the cause of this nuclear degeneration, Dr. Pel at once excluded the idea of progressive bulbar paralysis. The unilateral character of the affection rather tended to support the assumption of its being a syphilitic degeneration of the vessels. Whether the hemi atrophy of the tongue pointed to the patient's being affected with tabes, would be rather difficult to decide.

Two further points required to be considered. What was the abnormal position of the tongue due to, and how could the existence of strong palatal reflexes exist in a case of lesion of the pons?

The twisting of the tip of the tongue when the organ was pushed out evidently depended upon the action of the right genioglossus muscle, and the turning of the tip to the right when the tongue lay at rest on the floor of the mouth, was due to the contraction of the longitudinal fibres of the right side. The retained palatal reflexes on the paralysed side could be explained by the sensory stimulus passing along the unaffected branches of the trigeminus to the intact facial nervous twigs which also supply the palate.

Our case like those recorded by Erb and Remak is also remarkable by the total absence of subjective symptoms. The patient was quite unaware of the affection of the tongue which examination revealed; all he had noticed was a change in his voice and the regurgitation of fluids when he drank rather fast: articulation and mastication, as well as the voice, were almost intact, thanks to the vicarious action of the sound half of the tongue and the muscles connected with the right vocal cord.

DENTISTRY OF THE PAST.*

By J. H. BADCOCK.

MR. PRESIDENT AND GENTLEMEN,

The subjects brought before our notice at the meetings of this Society are, without exception, of such an eminently practical and scientific nature, that I feel I must begin this evening by asking your indulgence for a paper neither scientific nor practical, nor even possessing the merit of originality. It pretends to be nothing more than an extremely imperfect collection of facts and traditions of the past, culled chiefly from periodical literature, and having no bearing upon the dentistry of the present, except in so far as it shows the progress of our profession, slow, and with many backslidings, yet sure, from small and lowly beginnings, to a great and ever-increasing state of perfection.

We are an ancient fraternity. "While the Pharoahs were still ruling Egypt," says Oakley Coles, "before its occupation by Xerxes, or the foundation of the line of Ptolemys, Dental Science held its place as a recognised department of medicine.

That dentistry was practised by the ancient Egyptians some 4000 years ago is tolerably certain; for Herodotus tells us that there were even then specialists who made the teeth their peculiar care, and we find records that the loss of a front tooth was considered a disgrace.

Much has been written at various times about the great perfection to which this most wonderful of all nations had brought the art of gold filling, and it has been even said that a tooth has been found pivoted to a stump in the head of a mummy. Most probably all this has no foundation in fact.

Mr. Mummery, who gave much attention to the subject, has written, "I can find no authority for the assertion that the Egyptians made artificial teeth of ivory or boxwood, or that they practised the art of stopping. * * *

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*A Paper read before thd Dental Students' Society London School of Dental Surgery, Leicester Square.

The Egyptians were in the habit of gilding the eyelids, lips, and noses of their mummies, and a curious practice also occasionally prevailed of laying a thin plate of gold upon the tongue, inscribed with hieroglyphic characters; and these practices may have given rise to the mistake."

The whole question, apparently, rests on the authority of the Arabs, who might easily have been mistaken.

Traces of our art are also found among the ancient Hebrews; and there are now existing in the Archæological Museum several skulls of ancient Greeks, the teeth of which contain stone-like fillings. Even in the buried cities of the Western Hemisphere, dental instruments somewhat resembling those of the present day, have been discovered.

In a cave in Mexico were found six skulls, all dolichocephalic; and in one of the lower jaws, presumably of a muscular man about sixty, were two decayed teeth, which appeared to be filled with a substance similar to that found attaching an axe-head to its handle. The axe-head was fixed by cement alone, and was held firmly in place.

One of the earliest and most perfect records of a dental operation was found in an immense tumulus, about four miles to the west of Kertch, a small town in the Crimea. The tomb, which was Scythian, contained the remains of a king and queen. At the feet of the queen was a small vase of electrum upon which are four groups, in exquisite répoussé work, giving incidents in the life of the king. In one of the groups he is half sitting, half kneeling, while the Scythian dentist is extracting a tooth from the left side of the jaw.

In the skull the first and second left lower molars are missing, and the third is badly decayed. The presence of an alveolar abscess connected with the lost teeth at some period is shown by the condition of the alveolar process.

The reason that we find so comparatively little in ancient Roman, and Greek, and more especially, Egyptian, literature on the subject of our speciality, notwithstanding the fact that we have conclusive evidence that it was extensively practised. is probably that, in that age, what little was known of medical science was shrouded in mystery, and the secrets of the profession handed down from father to son.

In the works of Hippocrates, though he wrote much and does not appear to have practiced his precepts, we read, "Holy things are communicated only to the initiated, but they must not be trusted to the profane, before they have been initiated into the orgies of the science.'

It is to this author, who lived about 470 B.C., that we are indebted for the first mention of dentistry. He pointed out the sympathy which exists between the teeth and other parts of the body, notably the stomach.

Toothache he attributed to inflammation of the part, and for its cure he prescribed certain substances to be chewed; calling to mind the custom of chewing areca or betel-nut found among the Indians and other Asiatic peoples.

If this failed he resorted to stronger measures and employed the actual cautery, but he does not mention whether it should be applied to the tooth itself, as was the Egyptian method; or to the gum; or to the temples, as mentioned by Prosper Alpine; or, after the manner of the Japanese, to the mental foramen. All sufficiently strong methods of counter irritation, I think, Gentlemen.

In many of his theories he was marvellously correct; he not only was the first to describe alveolar abscess and necrosis of the maxillary bones, but also treated of fractures of the lower jaw, and advised securing teeth which had thereby become loosened, by ligatures. Extraction he mentions, but deprecates it, except in the case of very loose teeth. The forceps designed for the operation, "can", he says, "be used by anyone, and the operation itself is simple and easy." I fear we have very much deteriorated since the days of Hippocrates.

Nevertheless, removal of teeth was practised much earlier, and Cicero ascribed its invention, together with that of purging the bowels, to the third Æsculapius.*

Among the fragments of the works of Erasostratus collected and preserved by Cœlius Aurelianus, we find it recorded that a pair of forceps for this purpose was kept in the temple of Apollo at Delphi, but made of lead, to inculcate the precept that no teeth should be removed that could not be drawn out with leaden forceps. Indeed, there seems to have existed among the Ancients the strongest objection to the operation of extraction, an objection which lasted, strange though it may seem, as late as the seventeenth century.

Aristotle, although he did good work in Physiology and Pathology, does not appear to have given much attention to the teeth, for he says that man has more teeth than woman, and that the difference in the sexes is observable among various classes of the lower animals.

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* De. Nat. Deorum. Lib. iii. 22.

Pollux tells us that "Pyrrhus the Epirot had all his teeth in one mass, a complete ring of bone, and Mastor, the Cyprian, had a son born to him in a similar condition, and with the chin of a goat, and Timarchus, the Cyprian, had two rows of teeth, and the Chians say that Hercules had three rows."

During the four centuries that elapsed between Aristotle and Celsus, we find but little mention of Dentistry, although many had lived who distinguished themselves in Surgery.

In the Augustan era, so noted for gallantry, we find, as might be expected, much care displayed for the health and whiteness of the teeth.

Democritus gives a prescription of a dentifrice borrowed from a book called, after its author, "Pythicus," which was written in verse, and is the first example of the language of the Muses being pressed into the service of our arts, and Scribonius Largus has preserved the composition of that used by Octavia, the sister of Augustus. Burnt staghorn, the charcoal of several plants, salt, alum, and powdered glass, the whole flavoured with aromatics, seems to have been the usual thing.

Various prescriptions were in use to make the teeth fall out, such as the ashes of burnt earth-worms, which were to be sprinkled on the tooth. Cedar oil was supposed to split and extract the teeth. Other remedies for toothache, which were inserted into the ears of the sufferer, were the ashes of the skull of a dog which had died mad, mixed with Cyprian oil; earth-worms decocted in oil; bugs found in the mallow; ashes of serpents burnt with salt in a jar, and mixed with oil of roses. Any sort of excrement appears to be useful. especially that of birds, mice, and dogs. Various mixtures were inserted into the teeth themselves, by means of wax, such as grit found in the hollows of snail shells; spiders captured with the left hand and rubbed down in oil of roses; bones found in the deposit of dogs; teeth taken from live moles or dogs, and tied on; the heart of a snake; or a whole mouse chewed twice a month. All these were supposed to give freedom from toothache.

According to Strabo, in the third book of his "Geography" the Celtiberians, the Spaniards of to-day, "themselves and their wives, daily washed in stale urine, preserved in cisterns, and then cleaned their teeth with it."

Among the ancient poets one finds frequent mention of the teeth.

Ovid, in his "Art of Love," forbids picking the teeth in company; and he mentions that the odour of the mouth cannot be covered by perfumes, and therefore recommends, and very wisely, persons so affected never to approach too near those they are addressing, especially when the stomach is empty. Would that the "Art of Love" were more widely read!

It was doubtless to prevent the odour of the mouth being perceived that the Medes, notorious for their luxury, kept a sprig of laurel between the lips, as recorded by Virgil; and the coquettes of Greece, when they laughed, held in their teeth a piece of myrtle, presumably to display their beauty.

Martial tell us of an old woman who had lost all her teeth but four, which were loose, and one day she took cold and coughed them all out. He also tells us that "the best toothpick is the lentisk, if however, you cannot procure a tender shoot, you may pick your teeth with a quill."

This reminds us of what Carren has related in his "Voyage round the World," of the people of Cambay, who, he says, "poor as well as rich, spend two hours every morning in rubbing their teeth with a small piece of wood."

Celsus, a celebrated Roman physician who lived about the time of Christ, made great strides in the Dental art. He recommends filling carious teeth with lead, and other substances, and was the first to use the file for the removal of superficial decay. Regulation he treats of, and gives the earliest scientific instructions on the subject of extraction, quaintly informing us that "the tooth must be knocked about till loose, and then removed." Another method of his, not quite so scientific, was to place a peppercorn stripped of its bark, or an ivy berry, in the cavity, which according to his account, splits the tooth, sothat it comes away in scales.

Aretæus (90 to 120 A.D.) a Greek physician of the time of Vespasian, seems to have given the subject up in despair, openly confessing his conviction that "the cause of tooth-ache was known only to God."

The use of the file for the purposes of fashion is in all probability very ancient, as is proved by the singular skill in its use possessed by some African tribes who are in the habit of filing all the incisor teeth of both jaws to points, and so perfectly as to look as if that were their natural shape. Others divide each tooth longitudinally, so that it appears as two; those tribes which possess no metal instruments, using fragments of stone, or shell, or even fish-bones with great adroitness.

Galen, A.D. 160, arrived at a much higher standard of knowledge in all the branches of Medicine and Surgery.

Many of his observations are true and noteworthy even now. He described very accurately the various teeth, and originated the name of eye teeth for the upper canines.

He believed, however, that the teeth were of perpetual growth, and when they lengthened he reduced them with a file. This error crops up again at the end of the seventeenth century in the works of a celebrated Toulouse doctor (Bayle) who advises filing teeth that are long and thin, as one would prune a tree, to increase their size and strength.

Dioscorides prescribes for the cure of toothache that the patient should wear a necklace made of a plant called Lepidium; and one, Marcel of Bordeaux, a doctor of the fourth century, proposes a method as singular as it is disgusting.

"Take," says he, "the first leech that you can find, and put it in your mouth. Take it out again presently, and crush it between the middle fingers of the right and left hands, and say to it, "Leech, even as this blood shall not return into my mouth, so my teeth shall not pain me any more this year.''

To preserve oneself from all toothache, this process "must," says Marcel, "be repeated annually."

From a collection of very curious old Saxon manuscripts called "Leechdoms, Wortcunning, and Starcraft" and dating back more than 1,000 years, we gain a very good idea of Dentistry, as it was then practised in our own country.

The following are extracts:—"It is often enquired whether teeth be of bone, since every bone hath marrow, and these have no marrow; and other bones though they may be broken may, by some leechcraft be healed, but the tooth never if it be broken."

"The worst humour cometh to the teeth from the head, the moisture of the head falleth upon the teeth and pierceth through them, causing them to rot and swell, so that the teeth can endure neither heat nor cold, and especially the grinder teeth, which are fastened each with four roots, and then they leave their roots, and they turn black and fall.

This then is the leech-craft in that case. Take some part of the hide of a hart, and a new crock, and add water, and seethe three times as strongly as water boiling fleshmeat.

Let the man hold this water in his mouth, as warm as he can bear it, till it be cool. Then let him often take warmer, again casting it forth, and he will soon be mended."

"The herb Elecampane is good for soreness and wagging of teeth."

"For tooth-wark—If a worm eat the tooth, take an old holly-leaf, hartwort and sage. Boil it in water, pour into a bowl, and yawn over it. Then the worms shall fall into the bowl."

"For tooth-worms, take acorn-meal and henbane seed, and wax, of all equally much. Mix them together, make them into a wax candle and burn it. Let it reek into the mouth. Put a black cloth under. Then shall the worms fall on it."

Henbane seed burnt in some way or other is used in many parts of England even in the present day, in the belief that the lobes of the exploded seed, which move slightly on bursting with the heat, are really worms from the carious teeth.

This theory that caries is caused by worms, seems to have been very generally accepted. Various methods of destroying them were in vogue, the most general being the red-hot iron. But, as it went into the gums or tongue as often as into the tooth, we may suppose that it was by no means a favourite remedy.

Another method of treatment was to burn out the cavity of the diseased tooth with the wood of the ash, and afterwards fill it with honey.

Benedetti, with true scientific enthusiasm, gave much attention to the study of these worms and their habits; and, to destroy them, recommends the use of "eau de vie," a pleasant remedy truly, but condemns opium, "for," says he, "I have seen the abuse of this drug plunge a gentleman of Padua into an everlasting sleep."

It is stated that a certain Olig Jacobeus, having excavated from the cavity of a diseased tooth the softened dentine, saw a worm issue therefrom, which lived some days in water.

A still more curious belief was that in the existence of gold and iron teeth, and various wonderful theories were put forth to account for this freak of Nature. In fact, during the Middle Ages, very little progress was made in Dentistry as a science, and the most ridiculous superstition seems to have gone hand in hand with the most erroneous practice.

Here and there were exceptions, as in the case of Fabricius Hildanus, of Aquapendente, who, when a tooth was carious, removed the decay with an instrument, destroyed the nerve with a red-hot wire, and proceeded to fill the cavity with beaten gold.

John Arculanus also filled with gold, paying particular attention to the temperature of the teeth; if he diagnosed the disease as of a cold nature, he made use of warm substances, and vice versa, and in order that this effect of temperature should penetrate the teeth effectually, he broached as deeply as he could with a small instrument.

In the literature of the Elizabethan era, we find frequent mention of the itinerant tooth-drawer.

Fantastically dressed, his belt garnished with teeth, and wearing a brooch conspicuously in his hat, as we learn from Shakespeare,* Kind-hart, for such was his conventional appellation, travelled from town to town practising his calling on such as had need of his ministrations; much the same, I imagine, as does the itinerant dentist of to-day, except that he did not advertise, and displayed for show natural teeth instead of bad artificial ones.

In a book called "Kind-hart's Dreame" written by Henry Chettle in 1593, Kind-hart mentions "those tooth-drawers that from place to place wander, with banners full of horse's teeth," and grumbles "that forsooth by charms they can, at their pleasure, fray away the pain," and he gives a copy of one of these charms, as follows:—

"First he must know your name, then your age, which in a little paper he sets down. On the top are these words 'In verbis et in herbis et in lapidibus sunt virtutes.' Underneath he writes in capital letters, 'A AB ILLA HURS GIBELLA,' which he swears is pure Chaldee and the names of three spirits that enter into the blood and cause rheums, and so, consequently, the toothache. This paper must be likewise three times blessed, and at last, with a little frankincense, burnt, which being thrice used, is a power to expel the spirits, purify the blood, and ease the pain."

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* Love's Labours Lost, Act v. Sc. 2.

With the revival of learning as a whole, our profession took new life. Books on the subject appeared all over Europe in large and rapidly increasing numbers. Men of great intellect arose, who collected and arranged from time to time the fragments contributed by this host of workers, perpetuating the good, and consigning the bad to oblivion.

Among them I may mention; in the beginning of the sixteenth century, *Ambrose Paré*; and 200 years later, one who has been called the Father of Modern Dental Surgery, *Pierre Fauchard*. Following close upon him, the immortal *John Hunter*. Again another century, and *John Tomes* saw the light. Men, all of these, whose names will live in the history of our profession as long as it has a history, but of whom the recital of the work of any one would require far more space than could be given in such a paper as this, and far more ability than is possessed by its author.

It may not be uninteresting to glance for a few moments at Dentistry on the other side of the globe, namely, in China and Japan as it was practised ten or fifteen years ago.

The Chinese again attribute toothache to worms in the teeth, and it is worthy of note, how widespread this superstition is. At present I have heard no explanation of the fact whatever, and the only one that occurs to me is the nature of the pain itself, expressed in our own language by the word "gnawing."

The duty of the dentist is to remove these worms to the satisfaction of the patient, who naturally likes to see them.

He manages it by means of a bamboo spatula with both ends shaped alike, except that in one of them is a hollow, containing a few artificial maggots made for the purpose, with an occasional live one for effect, and covered over with thin paper of the same colour.

The operator first scarifies the gums, holding back the cheek with the solid end of the spatula. When there is enough bleeding he changes ends, tears open the now sodden paper with the lancet, and allowing the worms to mix with the blood and saliva, leisurely picks them out with a pair of forceps, explaining their inanimate condition by saying they were

were killed by a powder previously applied, or by being pinched in the forceps.

When the patient returns in a few days with a recurrence of pain, it is easily explained by more worms, which must be at once removed, and so it goes on until Nature effects the cure, while the dentist takes the fees.

Prosthetic dentistry was known to the Chinese ages before it was practised in Europe. The material used is bone or ivory, and the tooth, filed into shape, is fastened to its natural neighbours, by a copper or catgut ligature.

If more than one tooth is required, they are all made in one block and a double string passed through the whole. The loop goes over a tooth on one side, and the loose ends are fastened to another on the opposite side. This is Dentistry simplified.

The fee for a single tooth is from 2½d. to 5d., and for a partial set as high as half-a-crown.

In Japan, the "tooth-carpenter," as he is termed, is itinerant, and you may see him seated by the roadside beneath his umbrella, with a gilded sign, and specimens displayed, gossiping, or grinding a tooth. Here again it is hardly an occupation which brings wealth to its follower. He may if times are good get one or two cases in a fortnight, and he may as a very exceptional thing, get paid as much as twenty shillings, but as a general rule is perfectly content with five or ten.

The base of the denture is made of the hard shell of a species of gourd, let down after the manner of the bone blocks of old. Sometimes the teeth are roughly carved on the same, or they are of quartz or ivory fixed to the base by a thread. For masticatory purposes iron or copper tacks are driven into the ridge, and answer the purpose well.

Mr. W. St. George Elliott, in a paper on the subject, states that he has in his possession a case that has been in use for fifteen years and is still quite serviceable.

This brings me to Mechanical Dentistry, of which I have only time for the briefest mention, though its history is a subject whose interest will well repay its study. Its origin is, I think, to be found in the custom of tying in loose teeth with silk or gold wire, as is advised by Hippocrates, a practice even then of the greatest antiquity, as is proved by the following passage in the old Roman "Laws of the

Twelve Tables," originally borrowed from Greece,* and intended to regulate extravagance; "Neither shall any gold be thrown on the funeral pyre, but that serving to bind the teeth thou mayest burn withthe dead, and not break the law."

These laws were inscribed on bronze tablets which perished in the destruction of Rome by the Goths.

Trichbein records that seven teeth united with gold wire were found in a tomb together with several Greek vases.†

This habit of tying loose teeth to sound ones is an ancient custom among the natives of India. One of the most curious specimens of it was some years ago presented to the Medico Chirurgical Society of Edinburgh. It was taken from the mouth of a native queen and consisted of the whole of the teeth of the lower jaw, united by gold wire, which had been removed in one piece, the only points of attachment to the mouth being the apices of the roots of the wisdom teeth. The teeth of the upper were united in a precisely similar way.

Among the Greek and Latin poets frequent mention is made of artificial teeth as a common thing, ivory being the material mostly used.

It is related by Bontius‡ that the Javans and some of the natives of India, who lose their teeth while young, replace them by others of gold.. In other parts of India, where the idea is that the blacker the teeth, the more beautiful they are, it was the custom to set off this beauty by small plates of gold § inserted between them. In the South Sea Islands, mother-of-pearl is largely used for manufacturing false teeth.

In the last century artificial teeth were constructed from a solid block of ivory, carved to represent the missing teeth; or natural teeth were used, taken from corpses, or even from living men, and mounted on gold, silver, ivory, or boxwood.

This state of things continued, with more or less elaboration of detail, until the introduction of mineral teeth, poor things at first, very like beans in shape, and of the colour of a china tea cup, but improved in one direction or another by this man and that, till some of them are well-nigh perfect.

The adaptation of vulcanite as a base for teeth effected another revolution in the dental world. It was a grand discovery, insomuch that it placed within the reach of all what had hitherto been an expensive luxury, obtainable only by the comparatively wealthy. But, the introduction of vulcanite had its dark side as well as its bright one; for, as its manipulation requires but little skill in the hands of one who would be contented with fourth-rate results, it was the means of introducing into the profession, hundreds of ignorant quacks, who, by their extravagant advertisements and ghastly shop windows, attract the poor and uneducated; and often, indeed, those who ought to know better; and prey upon them at their leisure and inclination.

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* Cicero De Senec. ii. 24. † Peinture des Vases.

‡ De Med. Ind. Lib. 1, Ch. 18.

Gemelli Carreir—Voyage Autour du Monde, Vol. v. p. 128.

These practices we must resolutely set our faces against; and these men, if we cannot convert them to the right way, we must spare no effort to exclude, if our profession is to command the respect of the public, and ourselves to hold that professional status, which, according to Mr. Constant, belongs to the Dentist of the Future.

May the years be few ere these things also be relegated to the Dentistry of the Past!

THE DECIDUOUS TEETH; THEIR ERUPTION AND REMOVAL.

(*Concluded from page* 64.)

It is very evident that the eruption of the teeth is not a continuous process, but that they have periods of growth and of rest, not only of the individual teeth, but of the teeth as a whole, as they are developed in groups or pairs, these periods of rest and growth being modified or intensified by the conditions controlling the function of nutrition.

While, as a rule, the inferior centrals are erupted first, there are so many cases where the superiors make their prior appearance that the exception must be noted. In the following text and table let it be understood that it is only intended to represent the periods of eruption of the deciduous teeth of the average child, giving a range of two or three months for the several groups or pairs, the writer believing that this will cover the large majority of cases.

The deviations from this "time," as just stated, may be earlier by three or four months, or later by the same period. So constantly is premature development associated with abnormal systemic conditions, that it may be stated, with little danger of contradiction, that where the teeth are in process of eruption from the first to the fourth month the infant is suffering from either deficiency in quantity of blood or deficiency in some important constituents of the blood (anemia). On the other hand, a delay in the eruption from the tenth to the thirteenth month as frequently finds the subject vigorous in body, with the nutritional condition representing all that this implies. The lateral incisors are usually from one to two months later than the centrals, and, reversing the order of the centrals, the superior laterals invariably precede the inferior. The first molars next in order have their cusps uncovered by the absorption of the gum from four to six months subsequent to the appearance of the laterals, there being no regularity in the priority of their eruption in one jaw over the other.

The cuspids, following with about the same intermission, make their appearance between the lateral incisors and first molars; their progress is remarkably slow, and sometimes their eruption is delayed until after the appearance of the second molars. Various reasons have been ascribed for this delay. Trousseau thinks it is due to the greater length of their roots, but the probability is that, coming between teeth already in place, they have a denser, and thicker tissue to penetrate. A longer time is required for the removal of this tissue and for the completion of the root, which latter process must be reckoned as one of the factors in bringing the crown into place. The experience of the writer has been that the eruption of these cuspids, when occurring during the months of July, August, and September, invariably induces greater systemic disturbance than any of the other groups would under similar circumstances.

The eruption of the second molars usually follows close upon that of the cuspids, probably not more than one or two months intervening. With these the deciduous or temporary dentition is completed, usually during the first two years of life, and sometimes this age is not reached by two months. A delay in the beginning of the eruptive process is not necessarily followed by a corresponding delay in its completion. The writer has been acquainted with three families where no teeth were erupted before the eleventh or twelfth month, and yet the process was completed by the twentieth month and without unusual systemic disturbances.

At the sixteenth week of fœtal life the follicle which incloses within its folds the enamel and dentine organs or germs of the future tooth is closed, and the epithelial band, which has thus far served to hold these germs in connection with the epithelium of the surface, is broken, and the prospective tooth-germs are in what may be called the second stage, or saccular condition. Quickly following this, lime-salts are deposited upon the surfaces of these two organs, and a cap of dentine and a layer of solidified enamel-cells represent the shape and density of these two dental tissues. From the first appearance of these layers of solidified structures a process has begun which, when carried to its normal completion, must result in a dental armature completely occupying the alveolar ridges of a two-year-old child ; and from the beginning of this process we shall, for convenience, date the growth of the hard dental tissues, following them in the subjoined table from the commencement of calcification of their completion and arrangement in the dental arches, as follows :

17th week of embryonic life, enamel and dentine of central and lateral incisors begin calcification.

18th week of embryonic life, enamel and dentine of molars and cuspids begin calcification.

20th week, calcification of crypts which incase enamel and dentine germs begins.

40th week, or at birth, calcification of incisor crowns quite complete and roots begin to calcify.

3 months after birth, cuspid and molar crowns complete and roots begin to calcify.

6 to 8 months, central incisors erupted.
7 to 9 months, lateral incisors erupted.
14 to 16 months, first molars erupted.
17 to 18 months, cuspids erupted.
18 to 24 months, second molars erupted. Temporary dentition complete.

While the above table represents the average eruption of the deciduous teeth, there are many exceptions, representing tooth-eruption at earlier and later dates. As above stated, the earlier are usually in infants less vigorous in constitution than normal, waste exceeding supply, while the later periods are most frequently confined to those of good recuperative power and other favorable systemic conditions.

At the time of the eruption of the deciduous or temporary teeth the apical end of the root or roots is not necessarily completed in its calcification, and oftentimes some months elapse after the tooth has taken its place in the arch before the foramen in the end of the root is reduced to its normal size.

The arrangement of the teeth in two parabolic curves, the the superior describing a larger segment than the inferior, with the external cusps of the molars and the cutting edges of the superior anterior teeth closing a little external to the inferior, is a normal position seldom deviated from in the deciduous or temporary set. The teeth when first perfected are also equal in height, so that, resting the antagonizing surfaces upon a plane, all would bear equally upon it; they also stand side by side in close juxtaposition, without diastoma or spaces between them.

This last is a peculiarity of temporary duration, however, and is not usually observable after the fourth or fifth year. The crypts contained the partially-developed teeth which are to succeed the deciduous ones, behind or posterior to which they lie, are gradually pushing forward and occupying a more anterior position; and in this developing process the temporary teeth may be observed to be slightly separated. They are also, from the same cause, elevated from that uniform height which marks the early natural development.

The roots, which we have seen become perfected and present cone-shaped apical ends with minimum-sized foramina, are of short duration, for scarcely more than a year elapses after their completion before preparation is made for a retrograde metamorphosis, which results in the gradual dissolution of the lime-salts and a return of the organic elements in the root to their embryonal condition.

In the effort to tabulate this interesting and obscure physiological process—the decalcification or absorption of the roots of the deciduous teeth—it is difficult to do more than approximate the time at which it takes place. The period at which it begins, as well as the several progressive points indicated by the figures expressing years of age, though probably not accurate to the month, are yet sufficiently correct to warn the dentist of the need of great care in the application of arsenic for the devitalisation of the pulp and in the subsequent treatment of the pulp-chamber and root-canal. This process, beginning first in the roots of the incisors progresses gradually, when it is to be completely and normally accomplished, from near or at the apical end of the root toward the crown, occupying about three years in dissolution; and usually releases the crown of the deciduous incisor between the seventh and eight years, the absorption of the centrals' roots ordinarily preceding those of the laterals by some months. The absorption of the roots of the first deciduous molars may be placed a year later than those of the lateral incisors, beginning about the middle or close of the sixth year, and terminating with the removal of the first deciduous molars, about the tenth year, the second molars following usually some months or a year later. The cuspids, not infrequently the last of the deciduous teeth to be shed, have their period of absorption extending from the eighth to the twelfth year. While these periods mark the absorption and removal of the teeth in the average mouth, so variable are they indifferent families that many wide differentiations may be found.

Charles S. Tomes,* in speaking of root absorption, says: "It was a matter first accurately investigated by my father. The root, at or near to its end, becomes excavated by shallow, cup-shaped depressions; these deepen, coalesce, and thus gradually the whole is eaten away. Although absorption usually commences on that side of the root which is nearest to the successional tooth, it by no means invariably does so; it may be, and often is, attacked on the opposite side, and in many places at once."

"The cementum is usually attacked first, but eventually dentine, and even enamel, comes to be scooped out and removed by an extension of the process. That part of the dentine, however, which immediately surrounds the pulp appears to have more power of resistence than any other part of the tooth, and thus often persists for a time as a sort of hollow column."

That the absorption of the temporary teeth is absolutely independent of pressure is evidently the conviction of Mr. C. S. Tomes; in which the writer fully concurs, though he would take issue with the statement that a successful absorption may begin on other localities than the apical end of the root, and go on to completion.

The absorptive process, though a physiological one, is certainly somewhat obscure, and in contradistinction to the evolution of the tooth may be termed its dissolution.

The evidence of its being the result of a physiological action is in the fact that it matters not from how many centres it has commenced, it must, to be successful, involve in its early stages the root-canal and pulp therein, the latter maintaining vitality until the completion of the process, as the very moment vitality of the pulp ceases, that instant this retrograde metamorphosis designated "physiological absorption" terminates.

What induces this molecular dissolution it is difficult to state, though the several conditions which are always present and essential are readily rocognised, but the part each plays is not easily ascertained. The place of its commencement, at the end of the root, the retention of pulp-vitality, and the presence of a vascular papilla in close proximity to the absorbing surface, with the fact of the surface of this papilla is rich in giant-cells, termed "osteoclasts," are evidently essential accompaniments, and the absence of any one of them would certainly militate against the completion of the process.

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* Dental Anatomy, p. 195.

The statement that the presence and pressure of the permanent tooth are essential cannot be sustained, as frequently the decalcification of the deciduous tooth is successfully accomplished in the absence of its successor. Again, we often find the permanent tooth impacted against or within the bifurcated roots of the deciduous molar, or pressing down by the side of its single-rooted predecessor, both being more or less displaced by the persistence of the unabsorbed deciduous roots. That the organ has served its purpose, and the nourishment which had previously been appropriated by it is diverted or relegated to its successor, are probably important factors contributing to the success of this interesting physiological process.

This demonstration of dissolution is not alone confined to the roots of the teeth. The rami of the inferior maxillary give evidence of a similar phenomenon by absorption from their anterior borders, with corresponding growth of the interstitial tissue, giving development and prominence to their posterior lines.

There are also bone-cased cavities and canals, increasing in diameter and capacity by absorption from within and addition to the surrounding walls. These, we conclude, are the results of similar physiological efforts.

In considering the absorption of the roots of deciduous teeth, we must not overlook the difference between what has just been designated a physiological process, dependent upon the vitality of the absorbing structures and its contiguous tissues, and the pathological one, which is the result of a suppurative process following the devitalization of some of the same structures. In the former case, as above stated, when successful, the absorption begins at the apical end of the root, and removes the tissue by a gradual encroachment towards the crown, the interior of the root yielding to the solvent most readily, so that there is constantly maintained an inverted cup-shaped cavity into which protrudes the above described vascular papilla, the active organ in this retrograde metamorphosis. On the other hand, when the pulp is devitalized and an alveolar abscess is established at the apex of the root, a very different condition is presented. Through the difference of the pus in which the root is constantly bathed it presents a peculiar worm-eaten appearance, the shallow grooves oftentimes encircling the root, and presenting several more or less broken, ring-like excavations, varying in depth and wholly unlike in progress and completeness of result that which we have described as being physiological and occurring in the vital root, the devitalized root never in the writer's experience being wholly removed by the pathological process.

We have thus described the influence of what we have been pleased to designate normal and abnormal or physiological and pathological absorption upon the roots of the deciduous teeth.

These same absorptive processes have not been without their influence upon the permanent teeth; but when acting upon these structures much more frequently do they assume an abnormal type. In the large majority of cases disease has been the exciting cause; hence root-disintegration of the permanent tooth would in such cases be pathological. So dissimilar are the two processes, both as regards the progress and the appearance they present, that one would hardly hesitate for a moment in designating that process affecting the devitalized permanent teeth as pathological in contradistinction to the one removing the deciduous teeth, which we have styled physiological.

The exciting causes which stimulate in the vital permanent teeth the abnormality under consideration may be classed as largely mechanical, *i.e.*, injuries, such as partial dislodgment and replacement, malposition of the affected or the adjoining tooth, and a crowded condition of the arch.

It is rarely—indeed, it might be safe to say it is never—possible for a tooth to be dislodged from its socket and replaced, or another tooth inserted in its stead, without there being a persistent effort to reduce to its embryonal condition the bordering-line of one or both tissues which have been disturbed. If this effort is properly sustained by systemic nutritional wealth, the harmonious readjustment of the tissues to each other does not result in much sacrifice of structure; but with feeble recuperative power ,deficiency in quantity and quantity of pabulum appropriated, and hence in quality and quantity of blood, permanent deficiency of tissue must result. Of all the teeth inserted or reinserted with which the writer has been familiar, a final loss of the tooth by root-absorption could be traced to systemic peculiarities and defective manipulation as important factors inducing the result. That the most exquisite technical skill cannot insure success without regard to temperamental and nutritional qualities goes without saying.

THE BIRMINGHAM DENTAL HOSPITAL. The Amateur Opera Society has kindly given the proceeds of their performance of "The Pirates of Penzance," on January 21, to the benefit of this deserving charity. We learn that over 12,000 cases were treated at the institution last year, and that the income from subscriptions is less than £100, so that a debt has commenced to accumulate, which it is hoped this effort will help to diminish. The performances are, we learn, specially licensed by Mr. D'Oyly Carte.

A METHOD FOR DEODORIZING IODOFORM.—Dr. Taft writes, " Of all the various substances used for the purpose of correcting the disgusting odour of iodoform, there is nothing more effective than the aroma of a good quality of coffee such as Java or Mocha, the latter preferably as being the most pungent. The method I have adopted for this purpose is as follows : Take a half ounce vial and thoroughly dry it by subjecting it to heat. Then obtain one or the other of the above brands of coffee, pulverized if possible, otherwise pulverize it yourself, then fill the vial about one-third full, without packing, fill the rest of the space with iodoform, then keep it tightly corked. In following the above directions you will have one of the most valuable of remedies relieved of the most potent objection to its use. It will of course be understood that where larger quantities are to be used, a larger amount of coffee will be necessary for deodorization.

British Journal of Dental Science.

LONDON, FEBRUARY 1st, 1888.

POST-GRADUATE TEACHING IN DENTSTRY.

MOST people now-a-days recognise the value of post graduate courses of instruction. The large majority of men in those professions which are ever increasing their stock of available learning, or becoming subject to new methods of procedure, feel keenly the necessity for them, of teachers who have the time and the ability to collect and impart to others new facts and innovations of practice.

Busy men, tired and jaded after a day's toil, have little inclination, even if they have the leisure, to work through and digest the floating literature of subjects in which they are interested,—hence it is one hears of such experiences—" So-and-so belongs to the old school," or, is " old-fashioned " " His methods are *passe*—he clings to exploded notions, bygone maxims of operation." And, indeed, it is a painful truth that our son's schooling in professional matters commenced almost at the point at which ours terminated.

To enable practitioners who, earnest in the pursuit of their calling, desire to keep themselves abreast of the knowledge of the day, it has, at various times been proposed, to establish courses of Lectures to be delivered by skilled teachers. Bearing in mind the end at which such lectures aim, this is not a matter of slight importance upon whom the choice of Lecturer falls.

And yet so strongly is the want felt in Dental circles of Post-Graduate Instruction, that there is much danger of insufficient, unscientific, unrepresentative teaching being given, unless a stand is made by the really capable among us, and an effort be made to set on foot really first-rate courses upon the various matters on which dentists have to deal.

As a body, the Dental Profession in London, is not prone to teaching. Busy men find it a difficult matter to afford the time necessary for preparing Lectures, and among the Juniors their alacrity to impart more or less ill-digested reading, does not compensate for the want of clinical experience.

The question of Post-Graduate teaching has already been discussed, but practical difficulties have, up to the present, prevented any successful scheme being matured. However, the experience which kindred teaching in Medicine undertaken at Charing Cross Hospital with such remarkable results, clears the way to a considerable extent, and offers reasonable grounds for the adoption of a sanguine view of the prospects of any possible course of Post-Graduate instruction in dentistry.

The leaders among us in London and the other large towns in the United Kingdom have, ever since dentistry began to be called a profession, learned the lesson of self-abnegation so that one is assured as the occasion arises, these men will again be willing to put aside personal considerations, jealousies, emulations, and at whatever sacrifice it may cost, make way for such individuals as our teaching schools may think fit to appoint to the office of Lecturers for Post-Graduate courses. The mere fact that a widely spread want has been felt and expressed for such a course of instruction as that with which we are dealing is not enough, practical and financial support are necessary, if so desirable a system is to be attempted. The push, the energy, the perseverance must not have one side only, if we are to have Post-Graduate teachers, we must have Post-Graduate hearers, and workers. We have little doubt that there would be no dearth of such, but we would remind the profession that if they desire instruction, and will ask for it in a sufficiently emphatic way, teachers will arise, a system will be elaborated, and the Dentists of London will cease to be behind their confreres of some of the European capitals.

There may be some persons who have yet to learn why Post-Graduate Instruction is deemed a necessity, and who will indulge in that vain reiteration, "our fathers did well enough without Post-Graduate courses, and why not we?" The answer to this query taps the whole question of Dental Education—too wide a matter for us to enter upon at this present. It may be permitted us, however, to insist upon one or two points which trench upon the subject. The student in Dentistry, even at his best, can acquire but a vague foreshadowing of his life's work, rules and indications for their application crowd upon him, and many things come before his attention for which he can assign no logical place in his studies. It is, when in the prosecution of his every-day work after qualification, when he is brought face to face with fresh developments of disease, undreamed-of freaks of nature, bizarre effects of perverted habits of life, that he becomes aware how little does he know, and how imperfect is his grasp of the wider ranges of his profession. One of two alternatives is presented to men, saddened between the horns of this dilemma, the one, to ignore all that is novel, all that is inconsistent with their book-learnt dental lore, and pursue a rule of thumb as unchanging as the ordinances of the Medes and Persians. The other, to recognise that science admits no laggard followers, and to determine by diligence, study of nature, not of books, and so maintain a grasp upon the advances of scientific dentistry and those collateral sciences, without a knowledge of which the dentist's art becomes mere handicraft.

We do not desire in any way to inculcate unpractical ways. The dentist, with a brain crammed full of science, but a pair of hands as inept as a turtle, is a monstrosity, useless and dangerous. But he whose manipulative skill is guided by a fine fibred brain, whose tongue can speak of wisdom, which his hand can put into practice, is the ideal for which all should strive.

L.D.S. ENG., EXAMINATION.—The next Examination for this diploma will take place Feb. 20th, 21st, 22nd and the practical part will be held at the National Dental Hospital in Great Portland Street.

THE WISBECH CASE.—Many and various are the comments upon this case. Some go so far as to express strong indignation at the "tricky" manner in which they consider the defendant was brought to book. We fail to appreciate such depth of sympathy, if a man not only does wrong but does so so cleverly as to make the law almost powerless against him, it becomes necessary to employ strategy to circumvent cunning. It seems as difficult as ever to please all, but, perhaps, if the penal clauses of the Dental Act were so arranged that its violators could be transplanted into the immediate neighbourhood of their registered sympathisers all would be pleased. To have to hunt down any men professing to be members of a profession is bad enough, but to be hauled over the coals by the very men who are benefitted by such action is distinctly hard lines. Some whispers have been also uttered about the showy clap trap of special pleading which, clever and vivacious though it undoubtedly was, showed only too well how hopeless a task the Defence of such actions had to undertake. If any one could have made a case, Mr. Waddy, undoubtedly, would have done so, and as he did not succeed in carrying the day, we may hope to have such actions more easily disposed of in future.

SAD DEATH OF A NOTTINGHAM DENTIST.—The *Nottingham Daily Guardian* records the death of Mr. Bowmer. The Deputy Borough Coronor (Mr. A. Browne), held an inquest at the Green Dragon Inn, Park Street, Nottingham, on the body of this gentleman who was aged 79.—Clara Bowmer, of 3, Spaniel Row, and wife of Arthur George Bowmer, said the deceased was her father-in-law, who was a dentist. He had not been well for the last year but able to get about until he had a fall on the 18th of last month. He sustained the fall by slipping when he went out to close the shutters in the evening. She heard him fall, and on going out saw some men lifting him up. He was brought into the house and laid on the sofa. He complained of his leg. There was snow on the ground when deceased slipped. Dr. Truman was sent for and he had attended him since. Deceased had not since been able to get up, and died on Friday morning last.—Mr. Edgar Beckett Truman, M.D., said he was called in to see deceased on the 18th inst. He found him suffering from a fracture of the neck of the thigh bone. He had attended him up to the time of his death. In his opinion he died of congestion of the lungs, consequent upon the injuries sustained.—The jury returned a verdict of "Death from the effects of a fall."

APPOINTMENT OF DENTISTS TO SCHOOLS.—At a recent meeting of the Central London School District managers the following wretched piece of shortsightedness was enacted. The House Committee reported that they had considered the question of dentistry at the school, and recommended that Dr. Littlejohn should continue to attend to ordinary cases, and that a dentist should be called in for special cases. Mr. Hadden was not satisfied with the report, and urged the importance of appointing a dentist. Mr. Hart thought it was quite unnecessary to pay £50. The report was ultimately adopted. The utter callousness of the managers to the requirements of some hundreds of children reflects anything but credit upon their common sense or humanity. No ordinary medical man attached to schools knows anything about dentistry ; a few can pull out a tooth if hard put to it, but as to undertaking a rational and systematic overhauling of their little charges' mouths, they are utterly unable to make even a pretence of it. For the sake of £50, the wiseacres in question decide not to have a special dentist, and yet at the same meeting it was confessed that for lack of supervision £43 had been expended for plastering a cottage, which if the *City Press* report be correct, could have been done for £16. And again, these "grave and sapient seigneurs" discuss teaching the poor children "elementary drawing" towards which the Government gives a grant, and yet forsooth "it is quite unnecessary to pay £50 a year to get a special dentist! Fancy the intelligent majority in an "Inferno" with aching teeth, impacted wisdoms, and a school doctor to get them out of their trouble. We opine even Dante's pen could not depict their woeful plight and piteous plaints.

A NUMBER of the students at present attending the Edinburgh Dental School, have inaugurated a series of "socials," intended to be held during the ensuing sessions. In recent years most successful smoking concerts have been held under the auspices of the Edinburgh Dental Students' Society, but older, and no doubt wiser heads of the profession condemned the "smoker." As the outcome, the Society refuses to countenance the so-called evil, and the students taking the matter into their own hands, now meet once a month, and gossip over matters generally pertaining to dentistry. At the inaugural social, Mr. A. E. Donegan, B.A. one of the senior students, and the instigator of the movement, occupied the chair. A most enjoyable evening was spent, and in every respect the event was successful. The president of the Dental Students' Society, and the Hospital House Surgeon were present, and took an active part in entertaining their fellow students.

JOURNALISTIC AMENITIES.—In a recent issue of our esteemed contemporary *The Independent Practitioner*, Dr. Barrett says we have not mentioned more than once the source from which we have reprinted Drs. Heitzmann and Boedecker's papers upon the Development of the Teeth. It has always been our custom to give one intimation of the Journal from which we take our "Selections," and we have adhered to our rule in the present case, but as our friend the Editor of the I. P. thinks a series of articles should each be accredited to the Journal in which they first appeared, we shall in future adopt this course, which commends itself to us as being the fairest and most equitable plan of procedure.

A PIECE OF SHARP PRACTICE. The *Standard* gives the following extraordinary narrative. "A well dressed-woman who was among the applicants for advice said that she was obliged to use false teeth, and as she broke one on Tuesday 12th. last she went to a dentist in Chelsea who advertised "A new tooth for 5s." She left her set with the dentist, who coaxed her to have another plate made and exchange the old one, and pay him a guinea. He promised her the new set the same night, and he kept her in the miserable state in which she presented herself—without any teeth—for days, and the consequence was she got a terrible cold in her face. On Friday night she went to his place, and the new plate did not fit. She was informed that the old one was broken up, and after her complaint the dentist got possession of the new set, and declined to let her have any teeth unless she paid (laughter).—Mr. Partridge [the magistrate.] I am afraid you will have to go to the County-court, but I will let one of the warrant officers call on the dentist, who, I feel sure, will make any necessary alteration.—Applicant: But the teeth he has made don't fit me.—Mr. Partridge: Well, that may be a ground of action. It is better to arrange the matter amicably if you can, and for that reason I offered to let the warrant officer call on the dentist.—Applicant thanked his worship." Comment in polite language is useless.

AN EASY METHOD FOR LIQUEFYING CARBOLIC ACID.—The plan is a very simple one, consisting in the addition of sufficient alcohol to completely fill the empty space usually found in pound bottles of the acid, corking the bottle and inverting. The alcohol will gradually rise through the acid, dissolving it in the course upward until in two or three hours all the acid will have passed into solution.

TO REMOVE OIL STAINS FROM MARBLE STATUARY.—Make a paste with fuller's earth and hot water, cover the spots therewith, let it dry on, and the next day scour it off with soft or yellow soap.

Abstracts of Foreign & British Journals.

THE OHIO JOURNAL OF DENTAL SCIENCE.

NOTES FROM EUROPE.

By N. W. Williams, D.D.S., Geneva, Switzerland.

[It is well that we should know how others see us, so we publish the following abstracts] :—

The presence of genuine American dentists in England, has, the writer thinks, had a good influence upon "the native dentists." Many of the "native dentists" have had opportunity to come in contact with good operators from America. Many are unscrupulous enough to assume the name without any real right to do so, and without the knowledge to carry on the deception very long. The native dentists look upon us as interlopers who are taking the bread out of their mouths; and it is only natural that they should wish to do what they can to prevent it. Some of them are wise enough to see that the best way to keep the bread is to make better dentists of themselves; others—and he believes the majority—try by other means to attract the practice to themselves. Some are content to merely assume the name of American dentist, without taking the trouble to cross the water to get a diploma, which, in many instances, it seems involved only a trip across the ocean for many of these fellows to return with a diploma, each as a full fledged D.D.S., without their patients being hardly aware that they had been absent, and know it only when they see the "sheepskin" hanging upon the wall of the reception room, and the sign hung out with the legend on it "American dentist." The writer then quotes at great length the remarks made by the President of the B.D.A., at Glasgow, anent American dentists.

THE EXTRACTION OF TEETH.

By A. Berry, D.D.S., Cincinnati.

The extraction of teeth, sometimes very difficult, requires a high degree of skill for its suitable execution. Dr. Koecher says: "When we consider the frequent necessity for this operation, and its beneficial effects, even so far as it regards its physical influences, the great importance of it seems to be placed beyond any doubt; and, indeed on any branch of surgery more worthy of the particular consideration of the liberal-minded and scientific surgeon, than that which is the subject of our present remarks.

Prof. Taft remarks, "The extraction of teeth is an important operation, requiring for its proper performance, skill, judgment, and experience, as an accurate knowledge of the parts to be acted upon." Every desired extraction must of course be preceded by a careful examination of the tooth. If there is a probability of saving an important tooth by treatment the patient should be made aware of it. If extraction is still desired it is generally well to remove the tooth unless its retention is very urgent. The writer finds patients give few thanks if a dentist saves a tooth they desired to have extracted, and there is always a chance of the attempt to save the tooth failing. He advises a large stock of implements being kept. Before operating attempt to dispel the fears of timid patients; no deception should ever be practised. The patient who absolutely persists in having a tooth extracted in the manner he desires should be summarily discharged.

In the removal of teeth, the dentist should not become excited; and even in difficult cases he should keep cool. If disconcerted, although he may try to avoid manifesting it by word or look, the patient will understand and be unfavourably affected by it.

Every tooth to be extracted, and especially those much decayed, should be carefully examined, the manner of applying force decided on, as well as plan of proceeding if an accident occurs, the instruments are to be selected, and the ability of the patient to endure protracted pain, if necessary, is to be considered.

Some anæsthetic should be used in the extraction of teeth, nitrous oxide in suitable cases.

Lancing the gums, a barbarous, and usually a very painful performance, is rarely necessary. If proper instruments are skilfully used it will very seldom be needed.

With the head in the best position the tooth is to be seized as near the border of the alveolus as possible, unless from the extent of caries there is fear of fracture, when small pointed forceps may, if necessary, be passed between the sides of the roots and sockets, or they may be so placed as to get a hold on a root by breaking opposite sides of the alveoli ; or a small elevator may be inserted deeply enough in the socket by the side of a root to raise it, or such other means can be employed as may be thought feasible.

A tooth should never be extracted in a hurry. Force should be exerted cautiously, and in the direction of least resistence, and the movements watched. By applying force gradually, the shock to the patient, and danger from accidents, are lessened.

When a tooth is broken in an attempt to extract it the roots should be taken out if possible, in which there is seldom much difficulty with the necessary instruments and skill. Roots so left will often afford a chance to seize them or to remove them with elevators in a few months ; while in numerous instances a small portion of a root left in its socket causes no subsequent annoyance.

Troublesome hæmorrhage rarely follows the extraction of a tooth, nor is it difficult to suppress. Styptics applied to the gums may sometimes be advisable, but they are useless in the sockets, pressure being the only reliable remedy. Pledgets of cotton saturated with cold or hot water—preferably the latter—packed closely in the socket, and a compress on them to make pressure when the maxillæ are closed, with a bandage under the chin tied above the head, is the proper treatment, and will scarcely ever fail to stop the hæmorrhage immediately. The compress may be dispensed with in a few hours, and the cotton removed in three or four days.

Treatment immediately after the extraction of teeth may be necessary. If there is severe pain, applications of hot water, tincture of camphor, or any of the numerous anæsthetics may be employed. When these fail to afford relief, morphia, or a dose of whiskey or brandy, may prove useful.

It is well to cut off with scissors prominent points of loose gums. If sharp edges of the alveoli are felt, they should be removed with cutting forceps or a file. When the sides of sockets of the molars are forced outward in extracting, they should be pressed into normal position. Pieces of alveolar process broken loose should be taken away. If the gums are much diseased, it is important to give a prescription for their treatment.

Dislocation of the inferior maxilla is an accident which may, although rarely, occur in the attempt to remove teeth. After severe and prolonged operations when many teeth are removed the patient should subsist on slops for a while.

Reports of Societies.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

ANNUAL GENERAL MEETING, Held Jan. 16th, 1888.
F. CANTON, ESQ., *Treasurer*, in the Chair.

THE minutes of the previous meeting were read and confirmed.

The following gentlemen having signed the Obligation Book were formally admitted to membership by the Chairman: Messrs. J. H. Day, E. Preedy, J. B. Hordern, H. Pedler, F. Burton, G. G. Spray, J. G. Turner, G. N. Moseley, and H. G. Harper.

Messrs. J. H. Summers, and J. C. Oliver were duly proposed and seconded for membership of the Society.

Mr. C. J. Cowell was then balloted for and elected a Member of the Society.

Messrs. Bates and Horne were appointed Scrutators of the ballot, and the balloting for the Officers and Council for the ensuing year was then proceeded with.

The Chairman then called on the Secretary to read the Annual Report of the Council which was as follows.

GENTLEMEN,

In presenting to you their 25th Annual Report the Council have pleasure in being able to congratulate the Society on its continued prosperity. During the past year 33 new members have been elected, and the average attendance at the meetings has been over 31.

The papers read before the Society have been of a high character and of great interest, including papers by

Mr. A. W. Frost on "The Functions of the Teeth."
„ F. Lonnon „ "Antisialogogues in Dental Practice."
„ G. Seymour „ "The Preparation of Root Canals."
„ W. A. Hooton "How Dental Anatomy supports the Darwinian Theory."
„ J. F. Colyer „ "Gold Fillings."
„ R. H. Bates „ "Cleft Palate."
„ T. E. Constant "The Dentist of the Future."

The Council note with pleasure the full discussions which have been elicited by the papers.

The Society's prize for 1886 was awarded to Mr. A. T. Croucher for his paper on "Anæsthetics" and the thanks of the Society are hereby accorded to Messrs. Hern and Matheson for their kindness in acting as adjudicators of the award.

Under the able guidance of their President the Council have made several alterations in the conduct of the business of the Society. They have been enabled to come to a satisfactory arrangement as to the printing of the Transactions, whereby they hope that this the heaviest item in the expenses will be considerably reduced. They have made a slight alteration in Law xxxii, as reported in the Transactions for October. They have also revised the list of members, etc., to whom the Transactions are sent; and they have expended the sum of £5 in purchasing the latest editions of several Text Books to be added to the Library as Reference Books.

The Council note with pleasure the large number of cases shewn and casual communications brought forward, and trust that all members will endeavour to bring before the meeting any matters of professional interest that may come under their notice.

In conclusion they express the hope that each member will take a personal interest in the welfare and prosperity of the Society, and thus aid in maintaining its present high position amongst kindred societies.

The Secretary then read the report of the Treasurer for the past year, which was as follows:—

TREASURER'S REPORT.

MR. PRESIDENT AND GENTLEMEN,

In bringing before you to-night the Balance Sheet of this Society, a few words in the comparative balances of 1886 and 1887 may not be amiss.

The subscriptions received during the past year amounted to £23 16s. 0d., against £23 2s. 6d. received in 1886; but the expenditure amounted to £32 16s. 11d. as against £24 5s. 11d. in 1886.

This largely increased expenditure is due partly to the sums charged for printing the Transactions, and partly to the purchase of books for the Library.

The first of these items, as you have already heard from the Report of the Council, it is hoped will be very considerably reduced during the present year, and the second item is one which will probably not occur again.

We may, therefore, reasonably hope that these heavy items which have so reduced our Balance this year, will not be present in the accounts of next year, and that the financial affairs of the Society will again resume their former healthy condition.

Treasurer in a/c with Students' Society of Dental Hospital for the year ending Jan. 16th, 1888.

Dr.	£.	s.	d.	Cr.	£.	s.	d.
To Balance in hand	25	9	6	By Printing and Publishing Transactions	15	15	6
,, Annual Subscriptions	20	16	0	,, Stationery, &c.	1	5	1
,, Entrance Fees	3	0	0	,, Refreshments	3	18	4
				,, Society's Prize	3	3	0
				,, Purchase of Books	5	8	3
				,, Donation to Camps	2	2	0
				,, Sundries	1	4	9
				,, Balance	16	8	7
	£49	5	6		£49	5	6

HERBERT WILLIAMS: *Hon. Treasurer.*

REG. H. BATES,
FRANK C. PORTER, } *Auditors.*

On Casual Communications being called, Mr. J. F. Colyer presented to the Society models of a case of retarded dentition of a patient aged 14. The four six-year-old molars and two upper permanent incisors were erupted. There were no signs of any other permanent teeth. The patient was of the strumous diathesis. In two of the other members of the family there was an absence of a lateral in each, and all their teeth were diminutive in size.

Mr. Seymour presented a model of the lower jaw, of a man aged 32, showing four permanent right lower molars, and only one right lower bicuspid.

Mr. H. Eskell presented models of a case with exceedingly large upper incisors.

Mr. Boyton presented a model showing transposition of a second bicuspid and first molar in the left lower jaw.

Mr. L. C. Smith presented a model of an upper jaw showing two supplemental teeth, bicuspid in shape, one of which had been extracted, the other was to be taken out at a future date, they were both situated behind the upper central incisors.

The Chairman then called on Mr. J. H. Badcock, for his paper entitled "The Dentistry of the Past."

This was followed by a few brief remarks by Messrs. Harsant and H. Eskell.

The President having received the Report of the Scrutators announced the result of the ballot as follows:

President :—William Hern, M.R.C.S., L.D.S.
Vice-Presidents :—H. H Lloyd Williams, M.R.C.S., L.D.S.
Treasurer :—James F. Colyer, L.D.S.
Herbert Williams, L.D.S.
Honorary Secretaries :—Charles F. Rilot, L.D.S.,
George Seymour, L.D.S.
Curator and Librarian :—F. A. Harsant.
Council :—Second year's Students.--R. H. Bates. W. H. Dolamore, A. D. Horne, H. A. Washbourn, and E. A. Manton.
First year's Students—E. Preedy, G. G. Spray, E. Parsons, and F. Burton.

Mr. Robbins then proposed a vote of thanks to the President and Officers of the past year which was seconded by Mr. Harper, and carried by acclamation. The Chairman briefly replied, and proposed a vote of thanks to the Editors of the *British Journal of Dental Science*, the *Journal of the British Dental Association* and *Dental Record* for their kindness in supplying the Society with copies of their valuable Journals.

The thanks of the Society were voted to Mr. Badcock for his very interesting paper, and to those gentlemen who had brought forward Casual Communications.

The Chairman announced that the next meeting would take place on Feb. 13th, when Mr. Pritchard would read a paper on "Inflammation."

The meeting was then adjourned.

Dental News.

MANCHESTER ODONTOLOGICAL SOCIETY.

THE members of the Manchester Odontological Society, with a number of other gentlemen connected with the dental profession, dined together on Saturday evening at the Grand Hotel, Aytoun-street. Mr. HENRY PLANCK, L.D.S. (the president of the Society), occupied the chair. Among those present were Mr. C. J. Cullingworth, M. D., Mr. L. Matheson, Mr. W. H. Waite, D.D.S. (Liverpool), Mr. L. Dreschfeld, Mr. Parsons Shaw, D.D.S. Mr. W. E. Harding (Shrewsbury), Mr. P. Headridge, Mr. Taylor (Southport), Mr. Brunton (Leeds), Mr. S. Wormald (Stockport), Mr. A. E. Jones (Sale) Mr. J. Renshaw (Rochdale), Mr. H. L. Knoop (hon. secretary of the Victoria Dental Hospital), Mr. G. G. Campion and Mr. G. N. Skipp (hon. secretaries of the Manchester Odontological Society), Mr. Murphy (Bolton), and Mr. King (York).

Mr. Parsons Shaw, in proposing " The medical profession," said he knew of no other profession in which a man could do more good and in which could be displayed all the nobler qualities of man.—(Applause.)

Dr. Cullingworth, who was received with great heartiness, responded. In doing so he congratulated the members of the Odontological Society on the successful nature of that gathering, and said he believed the council of the Society had acted wisely in arranging a dinner at which members of the dental profession could meet each other and get to know one another better. With regard to the members of the medical profession in Manchester he might say he knew of no other large town in the United Kingdom in which the members of that profession were on terms of greater friendship one with another, and on terms of greater amity with the members of the dental profession.—(Applause.) That was largely due to the fact that they met together so much. In his opinion the members of the dental profession were exceedingly wise in combining together in associations which, although they were formed primarily for scientific and not for social objects, would in the end secure not only scientific but also social results.—With regard to the kind words which had fallen from the proposer of the toast he (Dr. Cullingworth) might be allowed to say that he looked forward to leaving Manchester with feelings of very sincere regret. He had received in Manchester so much personal kindness and had made so many warm-hearted friends that he regarded the prospect of removal to another sphere of labour with considerable pain. He had been about twenty years in Manchester, and every year had been one of happiness and of increasing respect for the community among which he lived.—(Applause.)

Mr. L. Matheson, in submitting the toast of the "Owen's College," said the people of Manchester had just reason to be proud of that institution, which in a few decades had taken a very high position among the educational institutions of this land. Ready and effectual help was rendered by the authorities of Owen's College in the establishment of a dental school in Manchester, and the origin of the dental hospital, which was essential to the existence of the school, was largely due in the beginning to the energy and kindness of a gentleman who remained no longer at Owen's College, but who had left behind him a record of brilliant and arduous services—Dr. Gamgee—(Applause.)

In the absence of Mr. A. H. Young, M.B., who was prevented by indisposition from being present, Dr. Cullingworth was called upon to respond to this toast. He said he was convinced that the dental department represented an additional element of strength to Owens College. In two years the number of pupils in the dental school had doubled, and he believed the same ratio of increase would be preserved for the next two years. There was great vitality in the dental department of the College, and he concluded from that fact that it was bound to succeed. Before sitting down he would like to say one word about the establishment of a dental diploma in connection with the Victoria University.—(Applause.) He did not think he would be revealing any secret which ought not yet to be made public if he said that the Victoria University was contemplating the establishment of an examination in dentistry, and proposed to give a diploma to successful candidates. The matter had been rather a long time in process of incubation, but he was in hope that the whole scheme would shortly be promulgated. Those who had the subject under consideration would have to be indebted to members of that Society for advice in the matter and would have to consult them before they could produce a scheme of instruction and of examination which would be satisfactory to the dental profession and to the public at large.—(Applause.)

Mr. P. Headridge proposed "The Midland Branch of the British Dental Association," and while doing so spoke in eulogistic terms of the services rendered by the gentlemen who secured the passing of the Dentists' Act.

Mr. W. H. Waite (Liverpool), in acknowledging the toast, said there was no district where the rules of professional conduct were so little valued and recognised. The ambition of those connected with the Midland branch of the British Dental Association was to engender a true correlation between the dental practitioners of the district, to bring them together as closely as possible, and so do what they could to break down and for ever abolish that isolation and jealousy which had so hindered the advancement of the profession. Communion with one another was in their case the true path of progress, whether in a scientific or in a political sense.—(Applause.) As a proof of the higher estimation in which dentists are now held, Mr. Waite mentioned the fact that the honorary dental surgeon in connection with the Chester Infirmary has now a seat on the board of management of that institution. Before concluding his speech he stated that at a meeting of the leading dental practitioners in Liverpool held a few days ago the idea was thrown out that it might be desirable to consider the propriety of Liverpool and Manchester uniting their forces and forming between them a strong and vigorous odontological society.—(Applause.)

Mr. James Taylor, D D.S., who proposed "The Victoria Dental Hospital," spoke of the bad effect which unwholesome food and unhealthy employments have upon the teeth of many persons residing in this district, and expressed the opinion that the necessity of paying attention to the teeth might wisely be enforced upon the attention of children while they are at school.

Mr. L. Dreschfeld, who responded, said the teaching staff at the Victoria Dental Hospital did their best to turn the students out as first-rate practitioners, and they intended to keep their teaching up to such a high standard that the Victoria University would not be ashamed to give diplomas to students receiving instruction there.—(Applause.)

After Mr. W. E. Harding had responded to the toast "The Guests," the health of the President was drunk, and the proceedings terminated. During the evening Mr. J. H.

Greenwood contributed one or two of his highly entertaining vocal selections; songs were also contributed by other gentlemen.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the Odontological Society will take place at its rooms 40, Leicester Square, on Monday, February 6th, at 8 p.m. Business: Casual Communications by Mr. Storer Bennett on "Dilaceration in the incisor of a porcupine." Dr. St. Geo. Elliott on "A System of Crowns." Papers by Mr. J. Bland Sutton on "Odontomes." Dr. Harlan, of Chicago, on "The management of Pulpless Teeth from the standpoint of daily practice."

C. J. BOYD WALLIS, *Hon. Sec.*

Hospital Reports.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Nov. 1st to Nov. 30th 1887:—

Number of patients attended		2640
Extractions	Children under 14	429
	Adults	1009
	Under Nitrous Oxide	671
Gold Stoppings		403
Other Stoppings		965
Advice and Scaling		150
Irregularities of the Teeth		219
Miscellaneous and Dressings		414
Total		4260

Herbert Williams, L.D.S., *House Surgeon.*

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Dec. 1st to Dec. 31st, 1887 :—

Number of Patients attended		2194
Extractions	Children under 14	363
	Adults	936
	Under Nitrous Oxide	536
Gold Stoppings		244
Other Stoppings		732
Advice		142
Irregularities of the Teeth		113
Miscellaneous and Dressings		474
Total		3540

James F. Colyer, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester, during the month of November, 1887 :—

Number of patients attended		1122
Extractions	Children under 14 Adults	760
	Under Nitrous Oxide	113
Gold Stoppings		41
Other Stoppings		111
Miscellaneous		316
Total		1341

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of December, 1887 :—

Number of Patients attended		790
Extractions	Children under 14 Adults	578
	Under Nitrous Oxide	61
Gold Stoppings		24
Other Stoppings		100
Miscellaneous		228
Total		991

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

Report of cases treated at the Royal Portsmith, Portsea and Gosport Hospital, from January to December 1887 :—

Teeth Extracted	687
Temporary stoppings	2
Advice Cases, Scaling, &c.	154
Irregularities of the teeth	88
Total	931

W. H. Kirton, L.D.S., R.C.S. (Ireland), *Hon. Dental Surgeon.*

APPOINTMENTS.

Mr. W. I. Fisk. L. D. S. Edin. of Kilburn & Watford, has been appointed Dentist to the London Orphan Asylum, Watford.

Mr. James F. Colyer L. D. S. has been appointed Home Surgeon to the London Dental Hospital *vice* Mr. Herbert Williams L. D. S. resigned.

OBITUARY.

David Gillies Esq. L. D. S. Eng. J. P. Co. Donegal, of Ship Quay St. and Hilimount, Londonderry, died Jan 1st 1888 after a brief illness. Aged 55.

Communications have been received from—

Mr. Masters, Manchester; Mr. Fred Page, Edinburgh; Mr. Morton Smale, London; Mr. Charles Foran, Southsea; Mr. W. J. Fisk, London; Mr. W. M. Gabriel, London; Mr. Wilson, Edinburgh; Mr. Amoore, Edinburgh; Mr. George Seymour, London; Mr. Paterson, London; Mr. Pattinson, London; The Editor of the Independent Practitioner; Mr. Herbert Williams, London; Mr. James F. Colyer, London; Mr. Charles H. Buckley, Manchester; Mr. W. H. Kirton, Portsmouth.

BOOKS AND JOURNALS RECEIVED.

Lectures on Certain Diseases of the Jaws. By Christopher Heath, F.R.C.S. British Medical Journal, Chemist and Druggist, Pharmaceutical Journal. Correspondenzblatt Zahuartze, Zahntechinsche Reform, Transactions of the Pharmaceutical Society, Transactions of the Odontological Society, Transactions of the American Dental Association, Transactions of the Students Dental Society, Journal of British Dental Association, Independent Practitioner, Dental Cosmos, Dental Review, American Journal of Dental Sciсnce, Southern Dental Journal, Dental Advertiser, Œsterreichische-Ungarische Vierteljahrsschrit für Zahnheilkunde, The Dental Record, Items of Interest, Monattscriff des Vereins Deuscher Zahn, Kuntler Ohio State Journal of Dental Science, Reveu Odontologique, Dental Register.

ANSWERS TO CORRESPONDENTS.

NOTICE TO CORRESPONDENTS.

All communicatious of a private and personal character will be answered in these columns. We cannot undertake to write letters to individual correspondents.

M. R. C. S.—The statement of opinion is correct, but the context should be read in order to fully appreciate our opinion of the preparation in question.

D. B.—Announcement made.

Mr. Foran: Southsea.—We are much obliged for the communication, but we think it is of too personal and private a character for us to publish; the demands upon our space are so great that we can only publish what is really of general interest to the profession.

L. D. S., F. P. S. G.—The wording of the Act is "a person shall not be entitled to take or use the name or title of 'dentist' (either alone or in combination with any other word or words) or of 'dental practitioner,' or any name, title, addition, or description implying that he is registered under this Act (Dentists' Act, 1878), or that is a person specially qualified to practise dentistry, unless he is registered under this Act." And again, "title," "addition," "description," are defined as any title, addition to a name, designation or description, whether expressed in words, or by letters, or partly in one way and partly in another." We should think the designation you mention would come under the Act, and the "Dental Specialist" be brought to book. The consent of the General Medical Council is not necessary before instituting proceedings. Anyone can make a case.

Mr. Ford Page, Edinburgh.—Thanks for the communication, we have done as you desire but have not received any report as yet.

Mr. Edward Wilson.—Thanks for your letter, all have a right to an opinion, we think fraudulent practices like those in question, should be pulled over at any cost.

British Journal of Dental Science.

No. 482. LONDON, FEB. 15, 1888. VOL. XXXI.

THE PATHOLOGY OF ALVEOLAR ABSCESS.*

BY E. LLOYD WILLIAMS, M.R.C.S., L.R.C.P., L.D.S.
Assistant Dental Surgeon, London Dental Hospital.

DEFINITION.

The term *alveolar abscess* has been used so loosely amongst Dental Surgeons, and its pathology so variously understood—at least, if we can gauge the latter point from observations of common practice—that it would be extremely hazardous to analyze the various opinions entertained, and attempt to strike a mean which might fairly be said to represent the average opinion. Under these circumstances, it becomes difficult to attempt a definition within limits at once exact and comprehensive. I think however, that I shall not trespass far afield in submitting that "*alveolar abscess is a circumscribed collection of purulent material as one of the results of inflammation of the alveolo-dental periosteum commencing around the root or roots of an individual tooth.*" This definition may appear at first to be somewhat arbitrary, if not insufficient; but it has at least the merit of cutting off a variety of suppurative affections, ranging from *mercurial periostitis* to *Riggs' disease*, and should prove acceptable if only on the ground that it thus narrows down the subject within the practical limits of a short paper.

ETIOLOGY.

In the vast majority of cases, the cause may be distinctly traced as a sequence of the death of a pulp, and a direct spread of inflammation from the point where the vessels at the apex of the root of a tooth are in immediate relation with the dental periosteum. And, inasmuch as the death of a pulp usually occurs after exposure to the external air, it is impossible in such cases to exclude the septic origin of the initial periostitis.

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* A Paper read before the Odontological Society of Great Britain.

But abscess may ensue on the death of a pulp after traumatic injury without access of air, and here the causation becomes more difficult to determine. And there is yet another form—*idiopathic abscess*—which is far from uncommon, where there has been neither exposure of pulp nor traumatic injury, and the tooth itself is apparently sound and normal in colour. This latter condition, which is probably due to nutritive changes which are difficult to trace, was well illustrated in a mouth which I once examined, where a lady about twenty years of age had three typical sinuses apparently in connection with the sockets of three lower incisor teeth to all appearance sound and healthy. Further interest was attached to the case from the fact that the patient stated that she suffered from a similar state of the mouth for several years during the spring. The condition passed away in a short while without active interference, and did not recur up to the time I lost sight of the case.

In a tooth whose pulp has died as the result of a blow without access of air the pulp itself may or may not be found to be in a state of putrefactive decomposition. My own experience leads me to believe that in the majority of such cases a septic condition exists, and on this point I am compelled to differ from Mr. Charles Tomes, who brought this interesting subject before the Society some little while back. It is by no means uncommon for suppurative collections in different parts of the body to be found in a stinking condition, an analogous state of things which is worthy of passing note being found in cases of abscess in bone where the pus is foul and greenish in colour. The precise relation of organisms to the processes of putrefaction and fermentation is a subject which excites much variety of opinion amongst modern pathologists. Believers in Pasteur's *germ theory* think that these processes are *induced* by organisms: whilst those who object to this theory contend that putrefaction and fermentation may be initiated without the presence of bacteria, and that the organisms *themselves* are *generated* from the organic constituents dissolved in fermentable fluids. If the latter theory should prove correct, then the occurrence of putrefaction in a pulp which has broken down without being exposed to the air, is but a normal pathological condition. On the other hand, if the germ theory be true, it is not difficult to believe that tissue whose vitality has become lowered, or altogether destroyed, may cease to resist the putrefactive influence of germs which, it is quite possible, may exist in normal blood even though they be difficult of demonstration. Experiments have been made on animals by feeding them on phosphorus and thus lowering their vitality, and in these cases micrococci have been distinctly traced in the blood. That the blood under certain conditions is capable of circulating infective material is now generally accepted, as instanced in *septicæmia* and *pyæmia*, and that the blood may harbour hæmatozoa has been demonstrated beyond cavil in the peculiar tropical disease known as *chyluria*.

There is yet another point with regard to the possibility of infection from another source, which is suggested by a statement made at the last annual meeting of the British Dental Association by the President, Mr. Brownlie, who unhesitatingly affirmed that a tooth is not in itself water-tight. I cannot personally endorse that statement; on the contrary, I believe it to be entirely erroneous, although I have not yet had the opportunity of carrying out a sufficient number of experiments to disprove the suggestion. If, however, a tooth in its normal condition does leak, another source of infection from the fluids of the mouth becomes easily conceivable.

Varieties and Clinical Characters. The principal varieties of alveolar abscess may be characterised as (1) *acute* and (2) *chronic.*

(1) The term *acute* as applied to an abscess of any description is indicative of an intense form of inflammation, generally dependent upon an injury whose action is short in duration and severe in character. Perhaps, the commonest cause of acute alveolar abscess is a sharp attack of pulp inflammation followed by its death. Clinically, it is characterised by an intense inflammation of the alveolo-dental membrane which extends to the adjacent alveolus and gum, and may largely infiltrate the overlying and continuous structures. The inflammatory process seems to force itself somewhere near the point of initial injury, and the abscess generally bursts on the surface of the gum in the immediate neighbourhood of the offending tooth. In a favourable case, when the pus is evacuated either by nature or the surgeon, the inflammatory action generally subsides gradually, and resolution of the remaining products appears to take place. In a less favourable case the acute passes into the chromic stage.

(2.) *Chronic* alveolar abscess is much less intense in chare acter, is often slow in asserting itself, and is generally consequent on the death of a pulp. It may develope with littl-

or no pain, and often only proclaims its presence in consequence of treatment of a pulpless tooth. A limited area of inflamed tissue within the socket ultimately breaks down, and the discharge, which may vary in character, seeks the surface by way of an empty root-canal or by a sinus through the overlying alveolar plate opening by a papilla-like orifice on the gum. More rarely, the pus may find vent by passing between a detached periosteum and the tooth, thus gaining the surface at the margin of the gum. An abscess of this description may go on for an indefinite time, and seems to be capable of taking on alternate periods of activity and quiescence. Chronic abscesses in other parts of the body occasionally cease to discharge when the irritation causing them terminates, and they may diminish by absorption of their fluid components—whilst the solid elements become dried up and shrunken into a putty-like mass. They may remain in this state without giving rise to any trouble, or they may again become the seat of suppuration, and form what Sir James Paget has termed *residual abscess.* A similar state of things in a modified form may happen in the mouth, and it is far from uncommon to note instances which I think may be appropriately called *residual alveolar abscess.*

The area of inflammation is generally limited, but the ultimate sequelæ may be serious, involving necrosis of bone and destruction of the soft tissues; whilst the pus may eventually burrow through a track which often opens at a great distance from the socket of the errant tooth. As an instance of destructive inflammation of this kind, the specimen handed round is a good example in which necrosis of the superior maxilla extended from the upper canine to the wisdom tooth on the same side; involving the floor of the antrum, as the result of a chronic alveolar abscess in connection with the fang of the first bicuspid tooth. As an instance of the burrowing of pus from a chronic abscess of which there was absolutely no evidence in the mouth, I may mention a case in my own practice where a canal stood out in contour on the neck of the patient about the size of a goose-quill, eventually bifurcated, each branch ending in a pouch about an inch above the clavicle which, when full, discharged itself by ulceration of the skin.

But, however interesting it might be to discuss fully the clinical aspects of the subject, it is not within the scope of the present paper; but rather to confine your further consideration to the purely pathological phenomena of ordinary cases. And to this end, I would ask your attention exclusively to the changes which occur in the various tissues involved.

First of all, we may consider the *alveolo-dental periosteum* which plays a prominent part; and, inasmuch as the changes which take place may be studied with greater facility in chronic affections, the latter type of inflammation will be taken as illustrating the various processes which I propose to examine. The membrane itself is, as you know, composed of connective tissue of a moderately dense character, and the ordinary primary stages of inflammation common to this type of tissue are in no way different from those which occur in the alveolo-dental membrane. We will, therefore, pre-suppose the infiltration of the the tissue with leucocytes. This inflammatory process may end in *resolution*, *organisation*, or *suppuration*.

(1.) *Resolution.*—There is no reason to suppose that this process is uncommon in the alveolo-dental membrane, although it would, of course, be difficult to produce histological specimens—for obvious reasons. We are clinically familiar with cases of threatened abscess which disappear rapidly, where, no doubt, the primary stages of hyperæmia and infiltration do occur, only to be followed by the fortunate removal of the inflammatory products.

(2.) *Organisation.*—Failing resolution, the new cells with which the tissue is infiltrated become organised into a new tissue. This "productive" action is common in chronic inflammations, and is dependent on a low degree of inflammatory action. This process of organisation is demonstrable to the naked eye by the palpable thickening of a membrane which often retains its attachment to a tooth when extracted, and it is under these conditions that we are enabled to study the changes that occur. On making a section of a thickened periosteum, there are one or two things which enforce their identity upon us before making a minute examination. The first is, that the original oblique direction of the fibres is lost, and in its place the new fibrous tissue lies parallel with the root and its socket. The second is, that the intensity of the inflammatory action has been confined to the lower third (or apical portion) of the membrane. And the third is, that although the membrane may be variously affected in various degrees, yet no part entirely escapes the inflammatory action. The new tissue if examined minutely, will be found to be of two principal varieties. That which is more highly developed is *fibroid* in character ; it is dense in structure, and consists of closely-packed wavy fibres in which spindle-shaped elements figure conspicuously. A less highly-developed structure consists of a loose meshwork of adenoid character. In the early stage, some of the larger cells range themselves round, and enclose groups of smaller cells ; later on, the walls become condensed and fibrillated. This latter tissue is constantly present in low inflammatory conditions, and is often associated with teeth which are the subjects of periosteal irritation whilst their pulps are still in a healthy condition.

With regard to the *degenerations* which may occur, one would naturally look for a fatty change ; but although this is quite possible, I have been unable to trace a single instance of fatty degeneration. *Caseous* degeneration is not common, but I have come across evidences of it in a few specimens.

(*To be concluded.*)

DISCUSSION UPON THE USE OF COCAINE IN DENTISTRY.*

Mr. Amoore referred to one or two cases which he had met with in employing cocaine in tooth extraction. Like others, he had had his successes and his failures, and in one or two unpleasant consequences. Of the latter the most interesting was that of a lady who wished the stump of a central removed, and requested that cocaine should be employed. A grain dose was injected in a leisurely manner, extending over some seven minutes, and in seven minutes after the completion of the injection the patient lay back very pale, and, on being asked, complained of nausea. The tooth was then removed, and painlessly. She still remained in a state of semi-stupor, breathing with quick, short respirations ; the pulse was full. She was roused to drink a small cup of coffee, which was taken in a mechanical, unconscious manner, but with no apparent result. As the extremities were cold, she was lifted into a chair before the fire, and there remained without voluntary movement for twenty minutes. On being spoken to, she complained of cold, and a teaspoonful of brandy in warm water was administered. In another quarter of an hour she sat up, looking about the room with a dazed expression, but was unable to express her sensations with any clearness. In another ten minutes she rose and declared herself to be, and was to all appearance, "herself" again. On being asked, she said she had experienced pricking sensations from head to foot, and a feeling as if ice-cold water were running through the body, and had no recollection of anything between the last injection and the administration of the brandy. Mr. Amoore's experience had not been a very wide one; this had been the only troublesome case worth that name, and in one or two instances it had been very useful, notably in extracting a second lower instanding molar, where considerable and somewhat prolonged exertion was necessary to effect its removal (with the elevator); but taking it all in all, he would not be inclined to continue its use in the ordinary tooth extraction.

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* Held before the Odonto-Chirurgical Society of Edinburgh.

Mr. G. H. Watson said—My experience of cocaine leads me to think that it is not at all to be depended on. Before detailing some of my cases, and so as more readily to understand the symptoms, I shall in a few words give the physiological action of cocaine. In small doses it accelerates the pulse and raises the blood pressure. Large doses slow the pulse and lower the blood pressure, paralysing all the organic functions. The quickening of the pulse appears to be due to paralysis of the vagus, which, you will remember, is inhibitory to the heart and acceleratory to the lungs. I have used cocaine in some 25 cases for the extraction of teeth, and have had good, bad, and indifferent results, the good cases on the whole, I think, predominating. One of the good cases was that of a young lady suffering from a dangerous heart affection, where the slightest shock to her system might prove fatal. I was asked by her medical attendant to administer cocaine, which I did, and removed a very firm upper molar without causing the slightest pain, or any bad result. As regards bad cases—sickness, giddiness, headache, and a feeling of weariness, are some of the minor results ensuing from its use. One of my bad cases was that of a young lady who had a tooth extracted without pain, but afterwards palpitation of the heart came on, the pulse being as high as 140 per minute, and very rapid respiration, with dilatation of pupil on the side operated on. Brandy was administered, and also nitrite of amyl, which I saw recommended by an American journal for this purpose. After lying in my house for about two hours, I succeeded in getting her into a cab, and she, on arriving at home, was put to bed, and lay for the remainder of the day in a state of utter prostration, but was better the following day. This patient takes chloroform very badly, and seems to be peculiarly constituted in regard to anæsthetics. Another case was that of a young gentleman. Just as I was making ready to extract the tooth (which was removed without pain), I noticed his hands beginning to shake, and in a short time he was twitching his limbs about in all directions, and complained of difficulty in breathing, then he began dancing up and down the room, seeming to all appearance to have lost the ability to control his ideas and muscular movements, as he could not keep still one moment, while at the same time he talked the greatest nonsense. I administered a stimulant, and in about an hour after was able to get him settled down somewhat, and he left for home walking. His wife told me next day that there was a recurrence of the symptoms in Princes Street, and he had to be taken home in a cab, where he was looked after by his medical attendant. In regard to the indifferent cases, I have had several where little or no good was obtained from the injection of cocaine.

I have found a mixture of cocaine and chloroform useful in extirpating the dental pulp in cases where it was exposed, painting on it for about ten minutes.

The great disadvantage of cocaine for tooth extraction is the amount of time taken up in injecting. I find that the full anæsthetic effect is only produced by giving it sufficient time to be absorbed, and I am in the habit of giving it ten minutes on each side before withdrawing the point of the syringe. This is necessary, otherwise the cocaine escapes, owing to the density of the tissues of gum, and the slowness of absorption. In some mouths, where the soft tissue is very thin, it is an extremely difficult matter to insert the syringe point into the gum without pushing it through.

Taking all things into consideration, I think cocaine should be used very cautiously, the dose being always freshly mixed, and in amount 1 grain to 10 m. of water.

Dr. Smith said his experience of cocaine was considerable, but without a great deal more he did not feel warranted in expressing any pronounced opinion upon it as an anæsthetic in dentistry. He had taken some interest in it all along from the time of its being first brought into notice some 10 years ago. He considered its obtunding influence to be to a large extent superficial. The gum and adjacent structures might to some depth be anæsthetised, and in this way stumps or loose teeth might be removed with little or no pain at all, and firm teeth might be removed with considerable diminution of pain, owing in both cases to the forcible insertion of the forceps blades being much less felt. No special advantages appeared to attach to it as an application to exposed pulp. He had seen it act there as a source of irritation. Its principal successes had been where insensibility of surface tissue was sufficient, as in certain operations on the eye, the nasal cavities, or the skin. As to the symptoms sometimes produced by it, there was no doubt of their occasional serious nature. An admirable resumè of its uses had been given by Dr. M'Bride of this city. In young children considerable caution in its employment was indicated. Dr. Emmett Holt, in the *New York Medical Journal* for 1886, had related certain alarming symptoms produced in children from painting the throat in pertussis with a 4 per cent. solution. Bresgen mentioned a case where all the symptoms resembled those of an overdose of alcohol; while Spears of New York and Ziem pointed to alcoholic subjects being peculiarly susceptible to its influence. Mannheim and Heyman had both recorded cases of a serious nature resulting from its poisonous action. Chloral had been recommended as combatting its effects. It had been used for earache, a 4 per cent. solution being blown through the eustachian tube. In eye cases, besides being an anæsthetic, Dr. Guaita, in the *Annali di Ottalmologia* 1885, believed it to paralyze the functions of the fifth nerve, and that atony of the extrinsic and intrinsic muscles of the eyeball was produced by it, affording relief in glaucoma; and in one case apparently facilitating the return of a prolapsus of the vitreous humour. Dr. Smith quite agreed with the difficulty expressed as occurring in injecting it alongside the alveolar border, owing to the density of the textures in that situation. It should be kept in mind that in all cases of alleged diminution or immunity from pain by the use of anæsthetic agents, imagination and confidence in the success of the application were important factors with patients. Several instances were brought forward in illustration of this fact in the case of dental operations.

Dr. Williamson said his experience in regard to cocaine was limited to about twenty cases. For extraction of teeth several of them were quite successful, little or no pain being complained of, in two of these a feeling of drowsiness was noticed. In one of them, a boy of fifteen, a 1 grain dose was used to extract an upper molar with complete success, but the injection of half a grain on another occasion was a failure, but whether the reason was insufficiency of the dose or some escape of the fluid, he was unable to say. The time it took, combined with the uncertainty of the result, was sufficient to condemn its use for that purpose except in very exceptional cases. The position of nitrous oxide, as *the* dental anæsthetic, was not in the least disturbed by the introduction of cocaine. It did, however, serve a most useful purpose in cases where a molar tooth is presented, having been broken through the pulp cavity, and where it is not advisable to attempt its extraction. By putting a few crystals on the inflamed pulp, taking care to keep it dry for a minute or two, the sensitiveness would be very much diminished, and an arsenic application could be readily pushed under the edges and into the pulp cavity. He considered this its most useful application in dentistry. Occasionally he had tried to diminish the sensibility of the nerve pulp in the upper part of a root where an arsenic application had been made, but he had not found the results very brilliant,.

A NEW DEPARTURE IN BRAZING AND WELDING.

By T. Fletcher, F.C.S., of Warrington.

The use of Nitrous Oxide for blowpipe purposes has been recommended for the dental laboratory, but if anything of the kind is to be adopted, no doubt the compressed oxygen will be preferred on account of its cheapness. Whether ether gas will ever be adopted in ordinary practice is an open question; in any case very fine jets are necessary in the blowpipe, and to anyone accustomed to work with an air-blast, the plan is most deceptive. The heating power of the smallest jet is enormous, and so purely local that a plate of gold can be perforated almost instantly, without even warming the surrounding part. This excessive and purely local heat requires the greatest care, or the consequences will be split teeth, fused plates, and general destruction of the work, and, therefore, all experiments should be tried on waste samples.

As an example may be taken the fact that I fused a clean hole half an inch diameter in through a wrought iron high pressure steam pipe in 45 seconds, and the redness did not extend more than three quarters of an inch round the hole.

If the dentist wants heating power, no doubt we can get it to any extent, but in the compressed oxygen or nitrous oxide he has a power which will require both experience and skill to control.

The cheapening of oxygen by a new process of manufacture, has put into the hands of metal workers a new power. I have recently made a few experiments with the compressed oxygen and coal gas, and found that with a $\frac{1}{2}$-inch gas supply, a joint could be brazed in a 2-inch wrought iron pipe in about one minute, the heat being very short, the redness not extending over 1-inch on each side of the joint.

The appearance of the surface after brazing, led me to experiment further with welding, a process which is not possible with ordinary coal gas and air, owing to the formation of magnetic oxide on the surface. Contrary to my expectation, a good weld was obtained on an iron wire one-eighth inch diam., with a very small blowpipe, having an air-jet about $\frac{1}{32}$ inch diameter. This matter requires to be taken up and tried on a large scale for such work as welding boiler plates, which it appears to me can be done perfectly with far less trouble than would be required to braze an ordinary joint. The great advantage of this would be that the boiler would require no handling, but could be welded with an ordinary large blowpipe in position, and with about one-tenth the labour at present necessary.

The cost of the oxygen is trifling, and it is evident from the results obtained in brazing, that the consumption of gas would be considerably less than one-fourth than necessary for an air-blast, irrespective of the fact that welding is possible with an oxygen blast, whereas it is not possible if air is used.

The surface of iron heated to welding heat by this means comes out singularly clean and free from scale, and a small bottle of compressed oxygen with a blowpipe and a moderate gas supply, would make the repairs of machinery, boilers, brewing coppers, and other unwieldy apparatus a very simple matter. The trouble and difficulty of making good boiler crowns which so frequently "come down" would be very small indeed, when the workman has an unlimited source of heat at command, under perfect and instant control.

ON EROSION.*

By A. S. Underwood, M.R.C.S., L.D.S. Lecturer on Dental Anatomy at the London School of Dental Surgery, Leicester Square.

Mr. President and Gentlemen,

It is granted by all authorities that the form of destruction of the dental tissues which we call "erosion" has more or less baffled the attempts of pathologists to explain its phenomena. Dr. G. V. Black, of Chicago, in what is probably the most recent *resumé* of the subject, admits, after a very careful discussion of those facts which have so far been recorded, that the etiology of erosion is still a most obscure question and adds that it is the duty of all who may discover anything throwing ever so little light upon the matter to submit it to the profession. It is in the hope of adding afew facts to our present stock of information, and not with any ambitious designs of framing a theory, that I venture to occupy a little of your time to-night.

I have during the last four or five years been carefully observing the progress of one of the most marked cases of erosion that I have ever heard of, and comparing it with some other less severe cases. I have had the good luck to obtain several very thin sections of pronounced examples of the disease; and, lastly, I have recently acquired on objective ($\frac{1}{12}$ oil immersion, Swift) which defines clearly many appearances which have previously defied my attempts to decide upon their nature. Under those circumstances I have put together these notes for your consideration.

I should like to commence by describing the naked eye appearances and the general pathology of the case to which I have given special attention.

It was one of erosion pure and simple. The eroded surfaces were specially exposed to the wear and tear of mastication, and were in places almost inaccessible to the toothbrush.

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*A paper read before the Odontological Society of Great Britain.

When I first saw the patient she had never worn artificial teeth. Caries was present as well as erosion, and had in some cases attacked eroded surfaces. The erosion presented the usual characteristics of a perfectly smooth hard surface. a little tinted with yellow pigment. The lesions had much the appearance of injuries inflicted with files, the enamel always suffering more than the dentine, sometimes the whole surface appeared to have been cleanly sliced off, and in one case (a lower bicuspid) three of the four surfaces were thus removed, as also was the crown, leaving a sharply defined square pillar of dentine standing. In the lower incisors the labial surface was grooved as if destroyed by a narrow file. In the upper incisors the grooves were smaller, but often more numerous. The only situations which were free from the injury were the lingual surfaces of the lower incisors and the whole of the upper molars, and as I have never seen these surfaces attacked I do not think the change is due to a perversion of submaxillary or parotid saliva ; neither is the change limited to the necks of the teeth, though this is its most usual seat ; the crowns may be attacked.

Dr. Black, in the course of some experiments, undertaken with quite another object, discovered that teeth which were exposed to a continuous current of a weak solution of hydrochloric acid (1-1000) underwent a change much resembling erosion on those surfaces most exposed to the action of the current.

In the case described by Dr. Murie at a meeting of this Society in 1870, and figured in Mr. Tomes' "Manual of Anatomy," in which the teeth of the sea-lion suffered from an extreme form of this affection, the surfaces affected were eminently those most exposed. To sum up the question of situation, erosion does not affect specially the surfaces upon which the great salivary glands pour out their secretions (which surfaces are specially prone to collect tartar deposit), but rather seems to avoid them ; it does not attack exclusively the necks of the teeth, or those parts in contact with the gum ? it does not choose surfaces affected by wear and tear, but rather prefers parts that are never in the way of mastication ; and, according to Mr. Bland Sutton, in comparative pathology it usually attacks abortive and imperfectly formed teeth ; it avoids those nooks and crannies where food accumulates, and where caries is generally found, seeking rather surfaces that are freely washed by the saliva and where no food could lodge. Lastly, it is found where no toothbrush has ever been, and where no bands for attaching plates have been employed.*

In the case quoted first, as also in two others nearly as marked, the patients were exceedingly subject to a gouty form of rheumatism, and the normal condition of the buccal mucus was exceedingly acid. (This latter fact was observed by Dr. Black in several cases.) Another peculiarity was that up to the middle age in two cases, and about twenty-one in the third, there was nothing noticeable about the teeth; then a severe attack of rheumatism, following on serious domestic bereavement, was attended by a sudden and rather rapid outbreak of erosion. After the first outbreak the rapidity of progress of the disease gradually decreased, but suffered temporary exacerbations during subsequent attacks of rheumatism. The suddenness of the attack was also a prominent feature in a case reported by Mr. Steele to this Society in 1870, and in the subsequent discussion Mr. Harrison described some other cases in which the use of dentrifices and hard toothbrushes could scarcely have been assumed to be the causes, one of these occurring in a block of hippopotamus ivory, which had not been cleaned with toothpowder at all. In all the cases which I have examined the enamel has suffered more competely than the dentine.

In the cases quoted by Dr. Black, and in my own, the living tissues have suffered in different ways from the advance of erosion. Sometimes the eroded surface has been exceedingly hyperæsthetic, intolerant of acid substances, and exquisitely sensitive to touch, while in others it was absolutely destitute of sensation: sometimes the pulp has died before its surface was reached, sometimes it has been protracted by secondary dentine, sometimes it has been exposed while living—this latter sequel has been observed by Mr. C. S. Tomes and by Dr. Swain, but Dr. Black has not met with it.

So far the clinical phenomena which I have noted have been in accordance with the existing recorded facts; the value of these phenomena I shall attempt to estimate later on, but, before doing so, I will describe the appearance of the sections which I have examined under the microscope.

To be concluded.

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* The sea-lion described in Dr. Murie's interesting paper and the other Otariæ mentioned by Mr. Tomes suffered from erosion, but obviously it was not traceable to toothbrushes or to artificial plates, and it occurs in the mouths of human subjects, where neither of these civilising influences have been at work.

SURGEONS AND MECHANICAL DENTISTS IN BERLIN.

THE old dispute between *zahnartze* (surgeon dentist) and *zahntechnicher* (mechanical dentists), has been again revived in Berlin in connection with a proposal of the governing body of the working men's mutual society (sick fund) to afford to their members increased means of having their teeth attended to. The question having been put to the committee whether dental surgeons or mechanical dentists should be appointed, a lively discussion ensued, and the majority seemed to be in favour of engaging mechanical dentists, on the plea that the attending surgeon was the proper person to find out whether there was anything amiss with the teeth; in such a case he would call in the mechanical dentists who would act solely under his instructions.

No final decision on the point has yet been taken, and our contemporary the *Berliner Klinische Wochenschrift* is in a great state of excitement over the matter. As she points out if this resolution be passed the mechanical dentists will, undoubtedly, be exceeding their province, and infringing on that of qualified dental surgeons.

In all cases, of course, the associates would wait for the advice of the attending surgeon before having anything done to their teeth; the same course is adopted with regard to every other speciality and gynæcologist and laryngologists might with equal reason be looked upon as the assistants of the attending surgeon, and be chosen from among unqualified practitioners. The proposal seems to have been specially made on the score of economy, but as the Berlin paper states that hardly holds good, for it is quite possible to obtain the services of dental surgeons at rates not one whit higher than would be demanded by mechanical dentists. The general public in Germany seems to be still sadly lacking in the appreciation of the value of scientific education in the case of dentists. If we look nearer home I fear the same will be found to be the case to an extent we should hardly care to acknowledge.

STOMATITIS CHRONICA.

In the *Viertheljahrschrift fur Dermatologia and syphilographia*, is an interesting account, by Winternitz, of a case of a young servant girl, aged 30, who had never had syphilis, and had been affected for the last two years with white spots on the tip and back of the tongue and on the pink portion of the lips. A carious portion of a tooth corresponded to each patch on the mucous membrane where the microscopical examination of the patches showed besides a considerable quantity of mycelial threads and hyphomycetes an infiltration of cells, a lengthening and broadening of the epithelial tufts, the cells of which, more especially those of deeper layers of polyhedral cells had a glassy appearance. Antiparasitic remedies were tried but with no result. The patches only began to disappear after the extraction of the carious teeth and after being touched with caustics. Winterintz calls the affection Stomatitis chronica squamosa, brought on by carious teeth.

TEETH OF IDIOTS AND BACKWARD CHILDREN.

Under this title the *Progres Medical* publishes a very interesting review, illustrated by a number of remarkable woodcuts, of a thesis for the Paris doctorate, published under the auspices of Mr. Bourneville, one of the Physicians to the Bicetre Asylum for Idiots, by one of his pupils, Mdme. Alice Sollier, a lady who has for several years past devoted herself to the subject of dentistry as well as medicine. She finds that speaking generally, idiocy with or without epilepsy is a predisposing cause to arrests of development, to anomalies and lesions of the dental apparatus in no less proportion than 91 per cent of cases. Congenital idiots do not appear to suffer more in this way than those who become so during their first dentition. In almost all the cases, the permanent teeth are those affected. Some idiots are very precocious indeed in this respect, and Mdme. Sollier is able to give a case of a congenital idiot, who was born with one tooth. It is more common, however, to find the first dentition appear rather late in as many as one quarter of the cases. The milk teeth are almost always shed rather later than usual. The anamolous changes, however, rather affect the permanent teeth which appears more or less late in more than one third of the cases, (36 per cent), rather later in congenital idiots than in more or less backward epileptics. Microdentism is a rather common condition (14 per cent), and is usually met with other anomalies especially with giant molars. Increase in size is rather less common, 11 per cent., and especially affects the median incisors as previously noticed by Mr. Bourneville.

These two anamolies seem to compensate each other, and this appears all the more likely, as in some cases two teeth are actually fused. Occasionally the tooth next to one of these giants is missing ; this explains in a certain number of cases at least the genesis of giant formation and the absence of certain teeth. In eleven per cent. of these cases some teeth fail. Supernumerary teeth, however, are quite the exception, 2 per cent. more than half the cases (53 per cent.) some anomaly of shape was found Irregularities are of frequent occurrence, 54 per cent., but the actual changes in position are very slight. Canines and incisors are those more often affected in this way.

Mdme. Sollier then passes to the study of erosions. She follows Tournier's lead with regard to the pathogeny of these erosions ; and believes that the sole cause of this anomaly is some form of degeneration, such as epilepsy, idiocy or syphilis, even unaccompanied by convulsions. Of the hundred idiots examined, not one was the subject of congenital syphilis, though many had erosions of their teeth. Two other forms of lesions are met with in the teeth of idiots, furrows and notches. The furrows are always longitudinal and are not found in conjunction with any defect of the enamel. The horizontal furrows described by Professer Tournier as occurring in congenital syphilis are never met with in idiots. Notches are more often found than longitudinal furrows 58 per cent. to 41 per cent. Notches are frequent concomitants of convulsions, but the author would not like to jump to the conclusion that they stand in the relation of cause to effect. All these lesions often occur together in the same subject.

Mdme. Sollier also finds that there is often a want of articulation and some defect in the hard palate. Mr. Bourneville had already noticed the frequent change of shape of the dental arches, which instead of forming an ellipse, run in three straight lines, an anterior and two lateral. Mdme. Sollier described two new forms of anomaly. The first consists in a difference of level of the homologous parts of the upper jaw. The second is a sort of notch between the incisor teeth which cannot be brought into contact when the jaws are closed. The paper as above stated is profusely illustrated, and well worthy of the perusal of dental practitioners and senior students.

A NOTE ON ŒZENA.*

BY DR. JOHN SMITH.

THE words of the paper said that although he had not come prepared to speak on any special subject this evening, he felt inclined to take advantage of its being a meeting where casual communications were admissible, as from some points referred to in the discussion he had just had the advantage of listening to, one affection suggested itself to him as worthy of the Society's consideration either now or at some future period—that was what is generally called œzena, a name which has been very loosely applied, and which conveys no definite indication to the exact nature or precise seat of the disease. Most dentists have met with cases where extraction has been adopted for various nasal affections, but these have generally been of a superficial or external kind, while too little notice had been taken of the probable association of œzena with dental disorders. This disease has been attributed to several pathological lesions. The most common explanation of it has always been that it rises from a peculiar condition of the mucous membrane of the nares, generally described as atrophic catarrh, a condition where absorption of the exudation from long continued chronic catarrh proceeds so far as to lead to atrophy, or shrinking of the mucous membrane itself, with variously altered states of its secretion.

Other causes have also, however, been adduced as producing this affection; necrosis and caries of the osseous tissues; scrofulous and syphilitic ulceration of the mucous membrane, with lupoid affections in some cases; foreign bodies, such as rhinolithes existing in the inferior meatus—these "nose stones" as they have been terned, occasionally forming from a deposit of phosphate of line and mucus taking place upon any foreign body which may have found its way into the nose, or upon small masses of hardened secretion; and, lastly, nasal polypi have also been alleged to be the cause of œzena—myxomatous or mucous growths from the middle or inferior meatus, or fibrous, or sarcomatous ones from the nasal roof, or base of the skull. Apart from the cavity of the nose proper, various morbid conditions of the sinuses connected with it, more especially the frontal sinuses and irritation of these sinuses generally, so many of which enter into the nasal cavity, have been blamed; but the frontal sinus seems the one most generally alluded to. These sinuses are the anterior ethmoidal, and the frontal sinuses, opening into the middle meatus, the posterior ethmoidal, and the sphenoidal opening into the superior meatus—along with the maxillary sinus, also opening into the middle meatus. Some of these sinuses such as the frontal and maxillary sinus, vory obviously enlarge with advanced age. The frontal sinus, indeed, seems to expand in following recession of the brain in old persons, and in it and existing upon its secretion have been found various sources of irritation. Fraenkel describing, I think, two cases where centipedes have been found, and a case being related in the *Medical Times* for 1876, where obstinate epistaxis was occasioned by the presence of an insect in that locality.

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*A communication made to the Odonto Chirurgical Society of Edinburgh.

All these might from time to time furnish the cause or seat of this disease; but from a considerable number of cases falling under his observation during, he might say, the last quarter of a century, Dr. Smith suspected that a majority of them involved a morbid condition of one of these sinuses not at all specially or in any marked manner dwelt upon in the ordinary surgical text books or other works of the kind, and that was the maxillary sinus or antrum of Highmore; and of late he felt more than ever convinced that such a case was one of the most frequent to be met with.

This, he thought, was easily and simply explained. The other sinuses, with the exception of the possible entrance of foreign bodies, are not subjected to anything like the risks of morbid action being set up within them, while from their situation the retention of their contents would be less prolonged; and even this, along with slow and scanty or occasional occurrence in mucous discharges was know to be one of the chief factors in their fœtid condition when this is present.

Now, the floor of the antrum is below the opening of that cavity into the middle meatus, so that an accumulation of slow and scanty muco purulent discharge would have ample time to collect and remain there till the characteristic odour was evolved.

The practical lesson inculcated is the removal of all apparent sources of irritation in this quarter in every case of œzena. So far what had been advanced might be considered hypothetical. But, apart altogether from this view of the matter, he had seen of late several cases of so well marked a nature as to suggest his taking the opportunity, presenting itself, of bringing the matter before the Society, and where the disappearance of every symptom of this distressing affection had followed extraction of all upper stumps and loose or carious teeth present. He said all, because he had found that in extraction merely of such teeth as were supposed to be more closely connected with the antrum, although affording relief in some cases, in others it was not until every affected tooth in the upper jaw was removed that an effectual cure was obtained.

The Dental Hospital of Manchester.—The distribution of prizes took place last evening to the successful students in the late competition in the Dental Hospital in this city. The Dean (Mr. H. Planck) and dental staff were present, when Mr. T. Jones, F.R.C.S.E.—one of the medical staff of the Royal Infirmary—presented the prizes with a few congratulatory remarks. Mr. T. W. Saville (pupil of Mr. W. Dougan) took the first prize for dental anatomy, and Mr. Ernest Lathom (pupil of Mr. Frank A. Huet) took the first prize for operative dental surgery.

A Good Mouthwash.—Upon the authority of the *Chemist and Druggist*, we give the following formula—

Oil of wintergreen	ʒj
Oil of peppermint	mxv
Rose aniline hydrochlorate (or magenta)	gr. ss
Water	℥ss
Glycerine	℥iij
Rectified spirit to	Oj

Dissolve the oils in the spirit, and the rose-aniline in the water; mix the latter solution with the glycerine, and pour it into the perfumed spirit. Mix.

British Journal of Dental Science.

LONDON, FEBRUARY 15th, 1888.

DIETETIC SUBSTANCES.

We have more than once painted out how necessary it is for the dentist to know something concerning dietetics, as a word or two from him may spare his patient much pain and loss. Of course the dentist should not attempt to fulfil the functions of medical adviser, nor would the interference at which we have hinted, in any way, trench upon the physician's province. The doctor is not called in until the patient is ill, often delay is enacted until the sufferer has taken to his bed; but the dentist usually sees enough in the mouth the commencement of gouty and other forms of dyspepsia, almost before the patient is aware of more than a transient feeling of malaise, or being "out of sorts."

Among articles of diet which tend to promote or even to initiate indigestion, none is more common or more detrimental than the vegetable sugars, and it is upon a substitute for these bodies that we propose to offer a few remarks. Saccharine is a product of coal tar, discovered about eight years back by a German chemist, Dr. Fahlberg, and designated in the technical terminology of the laboratory, Benzoyl-sulphonic imide. It possesses all the sweetening properties of sugar without having any of its deleterious characteristics, so that saccharine may be freely used by dyspeptics without fear of ill effects. It is intensely sweet, and so needs to be taken diluted, and to effect such dilution it should be taken dissolved in hot water, alcoholic solution, or dissolved in an aqueous solution of an alkali. The sweetening power of saccharine is estimated at three hundred times that of cane sugar, while it is quite incapable of producing acid in the stomach, since from its chemical nature it is incapable of fermentation.

But saccharine possesses other, and as important, properties besides that of sweetening, it is a powerful antiseptic. And according to the researches of Stutzer and Stadelmann its antiseptic powers approach very closely in degree to those exercised by salicylic acid and thymol. The physiological behaviour of saccharine has now been carefully worked out and quite definite results arrived at although mainly of a negative character. In its passage through the body, whether it gains access to the blood through the alimentary tract, or by injection into the cellular tissue, saccharine undergoes no decomposition, but is speedily eliminated by the kidneys imparting a very distinctly sweet taste to the urine.

Sugar, as physiologists tell us, is not only a flavouring agent and agreeable adjunct to the table, but should be a very valuable article of diet. When persons can assimilate their sugary food and avoid an excess, they are certainly better for consuming vegetable sugars ; nor can saccharine be taken to substitute such sugars as a food. Its rapid elimination and its inability to enter into any sort of metabolism whilst in the body, preclude it wholly as a food ; but this in no way takes from its merits as a flavouring and medicinal agent for those persons in whom common sugar cannot be taken without producing fermentation and acidity.

Dentistry in Excelsis.—A correspondent has kindly favoured us with a small placard upon which is emblazoned the merits and artistic skill of a gentleman whom we will call Mr. "Snooks," because we should be sorry to hurt the feelings of the admiring crowds, who doubtless throng his waiting-room. Well, Mr. "Snooks" begins by designating himself, "a licentiate of the Royal College of Surgeons," but reference to that invaluable work, *The Dentists' Register* informs us that Mr. Snooks became L.D.S. *Ireland,* in 1884, which takes off some of the gloss. Further, our brother announces "Teeth and Stumps extracted at any hour (in the evening by his powerful gas Reflector). This is indeed a triumph of mechanical ingenuity, a mastery of mind over matter! Fancy the awe-inspiring effect of having an unbedded stump, removed by a gas reflector. "Powerful," indeed! it beats everything. We learn from the same broadsheet that Mr. "Snooks" is a Surgeon Dentist and *Chemist*, but surely he has a valid claim to being called the "wonderfullest" man about, and one whose "powerful gas reflector" ought to raise to the highest empyrean heights of Fame. Can an ungrateful generation let a "Snooks" remain *perdu* in a provincial town when, if his handbill is credible, he can do more with his powerful gas reflector than some of the best of us can do even when aided by nitrous oxide gas, and the most cunning tools of Evrard. *Væ Victor!*

STATE INTERFERENCE AND DENTAL PREVENTIVE MEDICINE. We are glad to hear that a vigorous effort is about to be made to obtain State intervention to secure for schools and Her Majesty's servants in the forces some proper and efficient supervision of their teeth by duly qualified dentists. There can be no question that such intervention should long ago have been volunteered by the responsible members of the administration.

THE DENTAL STUDENTS' ATHLETIC CLUB.—Item the first, a smoking concert. Item the second, a dinner. The smoking concert is now a thing of the past; it was held on 2nd ult. and was a decided success. Besides a large gathering of the students of the London School of Dental Surgery, several members of the Staff were present Mr. Woodhouse Braine, whose geniality makes his presence always desirable at festive gatherings, Dr. Dudley Buxton, Mr. David Hepburn, whose recitation of "A Medical Student's Dream," brought down the house, and Mr. Lawrence Read who wielded the chairman's hammer. Besides many excellent performances by members of the Club, Mr. Hepburn, Mr. Latchmore, Mr. Rilot assisted, and Mr. Campbell Williams was exquisitely droll in "Our Penny Readings," in which he scored quite a success. A banjo trio by Messrs. Moore, Moneypennys, &c. was very clever. An excellent rule was made, but unfortunately broken, forbidding encores, and some surprise was felt that one or two performers insisted upon repeating their efforts even after the chairman's ruling, and without any apparent benefit to the enjoyment of the evening. If you want to give an encore when you are not asked for it, it is just as well to give the audience something worth listening to.

THE next "event," the dinner, is to take place on March 8th next, at the Holborn. Sir Edwin Saunders has consented to take the chair, and it is believed a very large gathering of the students and their friends will meet together. It is peculiarly appropriate that Sir Edwin Saunders should fill the post of chairman at this dinner, as to him almost more than to anyone the students of to-day owe a debt of gratitude. His munificence and personal influence have enabled the London Dental Hospital to enlarge its domains and greatly increase its facilities for teaching its students. Sir Edwin Saunders has given the students of this generation, comfort and opportunities for acquiring skill and knowledge, the like of which their predecessor never dreamt. The dinner tickets will be fixed at a low price, and so will be within the reach of all members of the Club and their friends.

AMERICAN DIPLOMAS.—Dr. Miller, of Berlin, says; "We have a record of the foreign diplomas improperly granted, and the Pennsylvania school heads the list, with the Philadelphia a good second. Baltimore stands next, and New York is fourth. No other college has issued more than three. The Pennsylvania and Philadelphia colleges have done more harm here by awarding diplomas to unworthy persons than sham institutions have by selling them."

The Western Dental Journal and the Odontological Society of Great Britain.—"I suppose every one knows of the Odontological Society of Great Britain. I proposed to them to get up some clinics. Their reply was that they were a scientific body, and wanted nothing to do with practice. I arranged two clinics at my own house, and invited the Society to see, at the same time, Dr. Rosenthal's apparatus for the treatment of alveolar abscess. There are one hundred members of the society. Five came."—*Dr Elliot.*—"This is about what we would expect from the Odontological Society of Great Britain, 'patterners after' the German method, which consists in wandering, note-book in hand, through the hospital wards, jotting down the length of the groans and the dimensions of the ulcers, while the patients die under their very eyes; but, you know, they are *scientific men*, who can not bemean themselves with practice, unless, perchance, a crown prince should be afflicted, and then their opinions are as varied as the stars of heaven."

The above paragraph occurs on page 553 of the December issue of the *Western Dental Journal.* It is a pity that our contemporary does not write about matters within its cognisance, and avoid sweeping criticisms of a society which has done more good scientific work than usually falls to the lot of specialist gatherings. It is so pitiful to find persons who should really know better than sneering at "scientific men," as if a scientist were anyone other than an individual, who, besides using his hands, has discovered he possesses a brain, and has further learned to use it. The sneerer at "scientific men" is usually so antithetical as to be ignorant of the importance of research. We are sure that our contempory knows better than this, and are therefore the more surprised that it has allowed itself to be led away into a piece of extravagant criticism based upon a circumstance, the particulars of which our contemporary is clearly ignorant.

Abstracts of Foreign & British Journals.

SOUTHERN DENTAL JOURNAL.

ARE WE JUSTIFIED IN PROMISING SUCCESS IN REPLANTATION?

By Jas. B. Hodgkin, D.D.S., Washington, D. C.

The following cases are given:—V. H. Upper centrals knocked out by a fall. Replaced in half an hour. Held by guttapercha splint and bandage over head and chin. Vulcanite splint made from impression taken a few days later." "June 23. Reported with teeth tight and painless; pulps apparently alive." The alveolar sockets were syringed out with tepid carbolized water, and the teeth washed in the same solution, the teeth were then replaced and a guttapercha splint adjusted, and a bandage and overall to keep the lower teeth firmly against the splint, and so hold all in place. There was not from first to last a single bad symptom, unless it was that the right central was slightly "springy" in place, probably by effusion of blood in the socket; but this soon passed away. After six months, H. called and had his molars filled, and he then discovered a slight tenderness of the right incisor, and a careful inspection showed a dead pulp. Drilling in he removed this, and filled the root, with a present subsidence of the disquiet. Four months later, these teeth were elongated and slightly more projecting than normal. As the bite was close, the lower incisors impinging slightly against the palatine slope of the upper, almost at the gum, and as the molars were abnormally short, a vulcanite splint was made to fit the lower incisors and canines, that mastication could be performed on this, and thus, by throwing the molars apart, allow for their elongation. This was a success so far as the molars were concerned; but the outward projection of the upper centrals—the teeth which had been replanted—not only remained, but increased, and a decided loosening developed, but no appreciable soreness was complained of. A pull-back splint was arranged for these, in the hope that backward and upward pressure would return them to their place; but it was ineffective, and possibly not regularly worn. In four months more, he extracted these teeth. They were pulpless, the roots greatly absorbed, and so loose as to be in a hopeless state." The case wholly favourable to the operation leads one to ask: "Is replantation justifiable? Is extraction for abscess, amputation, &c., of root and replantation a settled question?" It succeeds sufficiently often to justify its performance. It fails sufficiently often to compel its registration among the *doubtful* operations. C——, a student, had Dr. Younger, of San Francisco, "implant" lower bicuspid last winter. The implanted tooth took kindly to the new soil, apparently, at least, and in a short time became firm and useful. Inside of two months this tooth was removed with the fingers, with the root honey-combed and riddled with cavities of absorption. The tooth seemed as if worm-eaten.

THE DENTAL REVIEW.

ERRORS IN DIAGNOSIS OF PULP LESIONS.

By M. L. Hannaford.

Referring to "pain" the leading symptoms, he says:

1st it may be reflected in which case it may be simply wrongly referred by the mind; or the pain is actually induced in another place through the possession of nervous function. Concerning the first variety Dr. Black says, "By the sensation alone the patient is generally able, with certainty, to refer the pain to a given side of the face, but nothing more.

Quoting a case in point he says:

A patient had suffered very severe pain for 24 hours in head, face, and, especially, in the limbs of the affected side. Referred the pain to a lower molar in which there was a large amalgam filling. The roots had been treated and filled six months previously by a competent dentist in another city. Wanted it extracted at once. But as there was no indication of pericementitis, and not being willing to accept the evidence at hand, he began a search for the true offender, which was soon found to be an upper wisdom tooth, containing an oxyphosphate filling covering an exposed pulp. Here, then, was positively no reason for referring the pain to the lower tooth, except the remembrance of former trouble.

It was wrongly referred by the mind. The pain actually induced in the extremities illustrates the second variety of reflected pain, instances of which are most common.

Second : Is the pain due to hyperæmia of the pulp, or is it a true inflammation?

In hyperæmia? The pain is sharp and darting, often intermittent and usually is due to some form of thermal change.

In determining this point of sensitiveness to thermal change, the patient's statements are often misleading. Patients can form a habit of shielding certain teeth from cold water or air so that it is done unconsciously.

In testing pulps by changes of temperature, another thing ought to be borne in mind—that there is a condition in which we may be deceived by the action of *heat*. A pulp which has very recently lost its vitality may seem to respond, and a paroxysm of pain may be induced, due to the expansion of gas contained in the pulp cavity. It is relieved by cold applications, which in turn produce contraction. The permanent remedy is letting out the pent-up gases, and the proper treatment of the pulp chamber.

Hyperæmia often occurs in teeth whose pulps are not exposed, but where the dentine is reduced in thickness by decay or other means, and may vary from a slight distension of the vessels to an expansion sufficient to cause strangulation at the apical foramen.

The distinction between hyperæmia and inflammation is : That in hyperæmia the only tissue change is distension of the vessels; while inflammation is the result of tissue *injury*, and tends to the formation of pus.

The symptoms of hyperæmia can not be certainly differentiated from those of inflammation, and, indeed, both conditions may be present at the same time. Practically, all pulps actually exposed to the action of the saliva or any form of violence, are inflamed. To determine positively whether a pulp is exposed, is not an easy matter.

Inflammation, if the cause continues to act, tends to ulceration or abscess of the pulp, according as the seat of inflammation be on the surface or located deeply in the tissues. Pulps are destroyed little by little by ulceration, sometimes without pain if the exposure be large enough to admit of the escape of the waste products. In these cases we often find a remnant of living pulp near the apex of a root when the entire bulbous portion has been destroyed by disease.

Minute abscesses or pus pockets are often found in the substance of the pulp.

Neuralgias form a subject upon which every dentist ought to be well informed. Most cases of facial neuralgia are really reflected pain, but there is such a thing as a true neuralgia arising from a degenerated state of the dental pulp.

In the forms of neuralgia due to a diseased dental pulp, the pain is first felt in the second or third branches of the fifth pair, but soon affects both; the pain alternating between the two, or there may be painful points, referable to both at the same moment. The pain does not appear in the terminal branches or in the skin. After a time it manifests a peculiar tendency to pass down the sides of the neck and finally into the chest of the affected side. Paroxysms of pain are liable to be excited by trifling circumstances. But the most reliable symptom of this form of neuralgia is the fact that the disturbance of a particular tooth is sufficient to induce a paroxysm—not the rapping of the tooth—or any form of violence applied to the surface of the tooth—but the touching of the pulp with an instrument, or sudden changes of temperature.

The entire absence of acute symptoms in the tooth itself, point to a degeneration of the pulp, which may not respond to thermal changes, and will not become putrescent and excite periodontal inflammation. True neuralgias of dental origin are most frequently associated with exposures of the pulp in obscure cavities, which, perhaps, extend far under the gum, or are closed from direct contact with the air by an adjoining tooth, or a fold of mucous membrane.

Dr. Garretson says, "The pains of neuralgias are mostly acute in character; are confined to the tract or the periphery of a certain nerve, and remit or intermit."

Malaria, anæmia, nervous exhaustion—as from great grief—are predisposing causes to neuralgia, and when present, should receive their due weight in forming our diagnosis.

Reports of Societies.

NINETEENTH ANNIVERSARY OF THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

Reported expressly for the "British Journal of Dental Science."

The First District Dental Society of New York, the largest local society in the United States, and one that has done more for the progressive elevation of the dental profession, than any other society in the world, commenced its nineteenth anniversary exercises on Wednesday evening, January 16th, 1888, at the Masonic Temple, corner of Twenty-third Street and Sixth Avenue, New York.

Prayer was offered by the Rev. B. E. Bachus, D.D., of New York. After which an address of welcome was extended by W. W. Walker, D.D.S., President of the Society.

Dr. Walker assured all who come to attend these meetings now inaugurated that every courtesy would be extended to them, to attend the clinics and to hear the lectures.

Great credit is universally given by the profession of North America to the active and working members of this Society, among whom are Drs. Dwinell, Wm. H. Atkinson, J. N. Farrar, S. G. Perry, Carr Bronson, Carl Heitzmann, and one who for many years has been one of the most prominent and active workers, Dr. A. L. Northrop.

A happy response was offered by Dr. Louis Jack, of Philadelphia, Pa.

PAST AND FUTURE LITAGATION AFFECTING DENTISTRY.

An able paper was presented by J. Kimberley Beach, of New Haven, Conn., upon "Past and future litigation affecting Dentistry." The International Tooth Crown Company of New York, has been instituting suits against dentists for infringement of its so-called patents. It has been decided by the U. S. Courts that the Richmond patents, which included the crowning of a root with a gold crown, or even putting around the root, a collar and sealing the root by cementing over it a cap, were invalid. The Low patent has been held by the same court to be valid, which makes the dentist using the same liable to prosecution.

The Low claims, that were established, are, the support of a bridge, from one or more roots, over which is placed a cap, and said caps *hermetically sealed* to said roots. It is these peculiar combinations that constituted the Low patent. It bids fair to be a long and bitter fight between the contesting parties, and in any event will be carried up to the court of last resort, with good prospects in favour of the dental profession.

Dr. Dwinell, of New York, opened the discussion of the paper by inquiring "If it was known to you, that prior to 1878 (date of Low patent), that a gold cap and band had been attached to a root by cement, what would you say?"

This process was known as long ago as April, 1856. I published in the old American Journal of Dentistry, with illustrations, by cuts, showing roots surrounded by bands, that were cemented into such roots. I put in pins to establish my abutments, upon which I inserted an unbroken row of teeth. The plate was not to rest for support upon the gums, in no sense, but in every particular it was a bridge. I may not have used such a cement as is used to-day, but I used its equivalent.

L. D. Shepard, D.M.D., of Boston, was unable to be present, on account of the severe illness of his eldest son.

Examination of an Implanted Tooth.

Some ten weeks since, Dr. Atkinson extracted an upper bicuspid from the jaw of Dr. M. J. Younger, of California, that had been implanted some six months previous. Dr. Younger had kept the tooth somewhat loose by pressure of his tongue, for the purpose of seeing what its attachments might be.

Immediately after extraction Dr. Atkinson placed the tooth in alcohol, and conveyed it to the office of Dr. C. F. W. Bödecker, where it was subjected to a careful microscopic examination.

Different forms of micro-organisms were found in pockets where absorption of the cementum and subjacent dentine had taken place. There were found no traces of the original cementum. The erosion of the dentine had much the appearance of the absorption that takes place, in the process of shedding temporary teeth, considering its histological character, delicate fibrecentres were seen to enter the canals observed in some of the excavations coming from the living tissue of the alveolus.

"We deny (said Dr. Bödecker), however, that any living union had taken place. The firmness, or retention of the tooth was due to the granulations that had taken place around the implanted tooth, and not from any living vital union as has been claimed for such operations.

Prof. Heitzman said, that Dr. Younger had claimed the implanted tooth was vitalized. He could not admit this. Leaden balls had been implanted in living tissues for years, become encysted and borne a long time. If foreign bodies can be implanted and tolerated in living tissues, why not an implanted tooth? But all the attachments that go to retain the implanted tooth, were only cicatricial tissue.

There were on that softened ragged root, such remarkable micro-organisms that would alone have prevented any living union. There was found fibres of connecting tissue thrown out into the excavations, or holes of the cementum and dissolved dentine. We could expect success and retention for only a limited number of years."

Dr. Curtis, of Syracuse, N.Y., said he extracted an implanted tooth that had been in successful use for nine months. Its retention was so firm it was broken in getting it out. Sections showed the dentine to be normal, cement at junction of enamel, seemed to be normal. He thought that the union was by bony anchylosis.

G. V. Black of Illinois, thought if we could get a deposit of new cement on the tooth, the case would last for years. But we cannot.

Dr. W. H. Atkinson said these few specimens can only give us an imperfect impression of the success of the operation of implantation. The time is coming when we can say implantation will be a success.

H. J. Mc.Kellops, D.D.S., of St. Louis, Mo, was honoured by being appointed Supervisor of the Clinics, which were held at the New York College of Dentistry.

CLINICS.

Tuesday, January 17th, 1888, 9 a.m. to 12 p.m.

Dr. F. W. Dolbear, of Brooklyn, N.G., exhibited a new dental engine, styled "An out-of-the-way engine?" From the bed plate to which the driving wheel is attached, he has a standard five or more feet high, on the top is constructed a swivel joint to which is attached a horizontal arm, which will revolve any-way around the chair. Cord runs up the standard, over arm to a pulley, such as is found at the end of flexible arm of a White or other engine.

It was easy of construction, not expensive, not liable to get out of order, and a grand success. Always out of the way when not wanted. Dr. Dolbear's arrangement and improvement in the dental engine was well received.

Dr. C. L. Robinson, of New York, showed a fine case of Bridge Work, consisting of right lateral, canine, first and second bicuspids and first molar, five teeth anchored in the root of the lateral canine, and gold crown of 1st molar, that contained a live pulp.

Calvin Brooks, presented a case of implantation, of a right central in his own mouth, of 15 months' standing, which was firm and of normal colour.

J. Bond Littig, D.D.S., of New York, operated and

CONTOURING FRONT TEETH WITH PORCELAIN.

explained his method of "Contouring front teeth with porcelain." His porcelain contours have baked into them two or three pins. The latter are cemented into the dentine by corresponding holes in the natural tooth. The line of demarcation is hardly visible. The case he had on had contained a live pulp.

Dr. S. J. Shaw, of Boston, Mass., exhibited split or sawn rubber regulating plates. One end of the moveable portion of the plate is made to swing on a pin. The other is moved by turning a screw to bring pressure. A thoughtful and ingenious device.

Dr. Shaw also showed a most miserable failure of gold bridge work. The bands that encircled the roots, did not fit the upper or higher portions of the roots, into the twentieth of an inch, thus producing irritation and cultivation of of bacteria. It will be understood that this case was not one of Dr. Shaw's making, but of some of our dishonest "Cheap Johns," who like the microbes, only live to destroy.

Dr. A. S. Bennett. of Philadelphia, Pa., produced a patient in whose mouth he had set, several months ago, a case of Bridge work, consisting of the two superior bicuspids, and first molar having live pulps, in all the anchorages.

Dr. B. A. R. Ottolengui, of N. Y., gave a demonstration setting an artificial porcelain crown, the left canine, for a young lady patient. A substantial and beautiful operation.

A. W. Harlan, M.D., D.D.S., of Chicago, Illinois, exhibited to an exceedingly interested class of observers, his method of treating Pyorrhœa Alveolaris, or Riggs Disease. The doctor was very careful to remove all foreign bodies, as is the common practice, but he is a believer in the bacterium theory, and his success proves the soundness of his reasoning. His topical or local treatment consists of swabbing out the pockets below the gingival borders, with equal parts of the 1-1000 Bi-chloride of Mercury and per oxide of Hydrogen. The doctor's application would not be oftener than once in four days in ordinary cases, extending to the eighth day, as the case seems to demand.

Dr. C. Frank Bliven, of Worcester, Mass., confined his attention to showing the merits of his Pneumatic Plugger. It is capable of striking a soft or hard blow very rapidly. Quite an elastic blow. A beautiful and effective instrument for condensing cohesive gold or amalgam.

Dr. Bliven's instrument, that comes in immediate contact with the gold, is a long plugger, the same is used in the electric plugger. What is peculiar in regard to Dr. Bliven's Pneumatic Plugger is, that you can get a wiping or rubbing movement of the condenser point, in a more decidedly effective manner than with the electric instrument. It certainly has a great future before it. It does condense gold and alloy, or amalgam in the most perfect manner.

Geo. W. Melotte, M.D.S., of Ithaca, N.Y., gave a demonstration of his easily fusible alloy. Upon a steel rod four inches long set in a handle, he mounts a piece of soft vulcanized rubber about three-eighths of an inch indiameter, and an inch long. Around this he wraps a little rubber dam, so as to make a receptacle an inch deep, into this he pours his fusible metal, and when cool enough, can press upon the gums, and a cut off, central incisor, and obtain a sharp and perfect impression of the end of the root. This gives him a metal impression upon which to fit a band upon, ingenious and very useful alloy. The Dr. also showed a small tilting table upon which he could fuse gold with a mouth gas-blow-pipe—and a detachable ingot-mould into which he could *easily* and *suddenly* tip his melted gold into. Dr. Melotte is a great inventor, and we may have occasion to note some more of his inventions, for the benefit of the readers of this Journal.

To be concluded.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

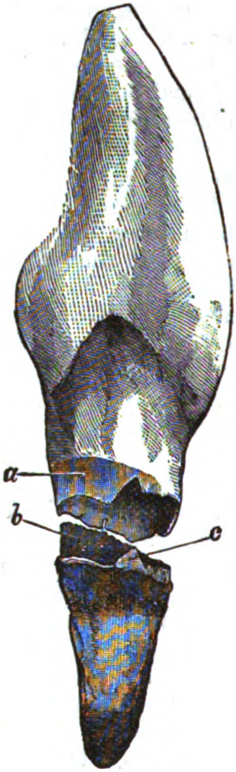
The second meeting of the session 1887-8 was held in the rooms of the Society, Chambers Street, on the 8th December—the President, Dr. Williamson, in the chair.

Mr. P. E. Fox, of 20, Northumberland Square, North Shields, was nominated as a member of the Society; and at the conclusion of the formal business,

The President exhibited a unique case of fracture of the right central incisor, which had the following history:—A gentleman, about forty-five years of age, had consulted him in regard to the loss of the right central incisor, which for some time back had been loose, and latterly had become so troublesome on that account that he removed it with his fingers, leaving a part of the root still remaining, which, being quite loose, was also removed. The left central was markedly discoloured, of a peculiar yellowish tinge, the pulp having evidently been destroyed by some accident which probably happened quite early in life, as he had no distinct recollection of its occurrence.

On examining the two parts, a most curious appearance is presented, a sort of natural mimicry in tooth substance, of a Richmond crown without the pin, the collar or band being represented by the cementum of the coronal fragment, and which fits on the corresponding portion of the apical fragment. In other words, there seemed to be a fracture of the dentine at one part and a fracture of the cementum at another. The dentine fracture is an irregular oblique one, upwards and backwards, the surfaces being quite sharp and seemingly without secondary deposit from either cementum or pulp. The cemental collar seems to be the ordinary layer, of about tho normal thickness. On the outside, opposite the site of dentinal fracture, there is not the slightest vestige of thickening, while on the inside the irregular fractured surface of the dentine retains its sharpness at its junction with the cementum. The depth of the collar is rather irregular, averaging fully one-sixteenth of an inch, but it is unfortunately deficient on the labial aspect, that portion having been broken off. The edges also are slightly chipped, but on the mesial aspect the edge is perfect, articulating with the corresponding part of the cementum on the apical fragment.

Looking at the apical fragment, there is presented the appearance of the cementum having been removed from a portion of the circumference in order to accommodate the collar of the crown. This denudod part is bounded on the upper side by a ridge of cementum running nearly traversely round the root, the thickest part being on the mesial aspect, forming the base of an irregular triangular piece which fits into a corresponding depression in the collar as already mentioned, and which in one sense should have formed part of it, but there being an extra thickness at that part, it had given



Mesial aspect. *a.* Cemental collar. *b.* Dentinal surface, on which the collar fits. *c.* Triangular fragment of cementum, the base of which is prolonged to the left, as seen in the figure.

[The cut is defective, in so far as the outline of the dentine fracture is much more irregular and angular, and the ridge of cementum, at the base of the fragment, is not brought out.]

way in the middle instead of at the edge, as in the rest of the circumference.

In the crown fragment the tooth was ground with a corundum wheel, in order to ascertain the condition of the pulp cavity, and it was found to be completely filled with secondary deposit, which extended to the fracture. In the apical fragment, calcification has taken place only at the plane of fracture, as a bristle can be easily passed from the apex up to that point, but not through, although there is an opening, but an extremely small one.

Whatever be the explanation of the conditions presented, it was evident that reunion had taken place by means of the cementum, where the ridge is formed, and also by the calcified pulp, although the latter organ would not add much to the strength of the union, as its substance does not seem to have spread over the fractured surface, as in a case described by Wedl in his "Pathology of the Teeth." The existence of this, or of any slight cemental deposit, could only be definitely ascertained by microscopical examination, which would necessarily destroy the specimen. The separation of the cemental collar must have happened at the period of the first injury, and the actual union taken place at the edges only. Why it should have done so and the dentinal fracture exist at another place altogether, was quite a puzzle, and which he could not attempt to explain, especially as the union between dentine and cement is supposed to be so intimate, and which fact serves as the practical reason for the removal of a slight scale of enamel at the cervical border of cavities. Another interesting point was the complete calcification of the pulp beyond the fracture, a condition not noted, as far as he was aware, in the rather scanty literature of the subject, but which could readily be ascertained without materially damaging the specimen. In conclusion, as to the number recorded of reunited fractures in the human subject, Wedl states that Hohl in 1870 gives eight as the number of known cases, seven being in incisors and one in an upper bicuspid.

Mr. Wilson thought that the ring or collar of cementum, most of which remained attached to the coronal portion of the tooth, and which had so long kept the two portions together, was a secondary formation, and there seemed to be a thin film of cementum on the fractured surface.

The obliteration of the pulp by osteo-dentine was most thorough—a process which seemingly had not been accompanied by much, if any, pain, the patient's recollection of the fracture at all being so faint.

It was a very interesting specimen, and, he supposed, unique.

Dr Smith considered the tooth as a very interesting specimen of union after fracture. There seemed to him to be an indication of a provisional callus having existed at one time—this occurring in some cases by an extra development of the cement, as pointed out by Salter in alluding to Wedl, who describes such cases. Sir John Tomes also, in his early work "Lectures on Dental Surgery," published in 1847, describes and gives a woodcut of united fracture in teeth, as well as union of the pulp by the ordinary dental tissues in dilaceration of growing teeth. Sir Edwin Saunders had described some cases of the same kind. The occurrence was a rare one; and he thought Dr. Williamson's contribution of much interest. The calcification of the pulp and cement seemed to correspond with what occurs in bones where the definitive callus is formed from the blood-vessels rather than from the bone structures proper; the dentine being really a non-vascular structure.

In reference to Dr Wiliamson's paper on pivotting, read at the last meeting:—

Mr Wilson said he quite agreed with Dr Williamson in the introductory portion of the paper, and also that on the preparation of the root.

He had had no experience of the Bonwill and other crowns lately introduced, using in his practice ordinary plate teeth, the small plate covering the surface of the root, as also the pin or pivot being platinum (in the latter the hard variety).

Many years ago he had occasionally used tube teeth, but their want of strength, as also the difficulty of keeping them free from contact with antagonising teeth, more especially when the bite was close, led him to discard them entirely.

He considered this latter point as of vital importance, so far as durability was concerned, the plate teeth gave greater probability of gaining this condition. While keeping the thickness of the pin proportional with the size of the root, he used much thicker wire than seemed to be generally employed, with the advantage that for years he had had no breaking of the pins (although these he notched with the file), and bending under pressure was impossible, accidents of not rare occurrence when he used pin-sized gold ones.

He still preferred silk and varnish (shellac or carbolised resin) for securing them, a thin layer of gutta-pecha or osteo being placed between the plate and the root.

His objection to amalgams or osteoplastics for securing the pin in the root was, in the first place, one had to weaken the root decidedly if a thick pin was used, and, in the second, it interfered with the ready withdrawal of the pin when, through fracture of the tooth, the case had to be removed for repair.

As regarded the probable duration of a pivotted root, much depended on the healthiness and toleration of its surroundings, its nutrition through the periosteum (unless accompanied by a thickening of the cementum, such as was seem to occur in the case of normal obliteration of the pulp in many of the lower mammals) being far from adequate to keep it long in health.

In those cases in which, owing to neglect or bad treatment the root presented a wide ~~conical~~ canal, he first filled with amalgam, and then pivotted, but did not raise false hopes of its being long useful. He rarely pivotted bicuspids, as the extreme irregularity as to the number and divergence of the root canals in these teeth made it a rather uncertain affair.

He regarded pivotting as chiefly valuable in enabling them to postpone the use of a plate, which, whether of gold or vulcanite was, to say the least, not conducive to the durability of the remaining teeth.

In conclusion, he would only add that he was quite in unison with Dr Williamson in his remarks as to the non-advisability of encouraging patients in the idea of replacing molars (especially lower ones) so long as the bicuspids remained doing duty.

Mr **Watson** made some remarks upon the histology of an odontome in the tooth of a horse, and illustrated them by passing round some photo-micrographs which he had taken, illustrating the tissues as seen under varying powers.

Mr **Amoore** gave a short *resumé* of some of the simpler methods used in the treatment of fractured maxillæ, beginning with bandaging and external splints, and then detailing some of the main types of interdental splints, and concluding with that known as Hammond's. These appliances were illustrated upon a boy to whose mouth they had been fitted.

GLASGOW DENTAL STUDENTS' ASSOCIATION.

At the January meeting of this association, the President, Dr. J. C. Woodburn, delivered a most interesting address, the subject being :—"The history of dentistry from the dark ages until the present time."

At the conclusion a hearty vote of thanks was awarded Dr. Woodburn for the trouble he had taken in preparing such an elaborate paper, and a wish was unanimously expressed that he should allow the address to be printed.

It was then announced that the next meeting would be held on the first Monday in February, when a paper would be read by Mr. D. Woodburn, entitled "Dental Caries."

Dental News.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

A meeting of the Birmingham Dental Student's Society was held at 71, New Hall Street, on Tuesday, Jan. 24th, 1888.

Mr. W. R. Roberts, L.D.S., occupied the chair.

There was a good attendance, amongst those present being Messrs. C. Sims, J. Humphreys, W. T. Madin, E. Sims, P. Sims, C. D. Marson, W. Royal, G. Foster, W. Whittall, and P. T. Naden.

The minutes of the last regular meeting having been read and confirmed were signed by the chairman.

Mr. C. Sims then read a paper entitled "Ancient Dentistry," (accompanied with specimens). The paper which was most interesting and instructive, dealt with the dentistry of some 40 or 50 years ago. Amongst the specimens shown were some plates carved out of bone blocks, and having natural teeth fitted on to them in the same way that our tube teeth are fitted on to gold plates. Some of the plates exhibited marked signs of decay, this no doubt being due to certain causes producing an acid reaction of the secretions of the mouth.

At the conclusion of the paper, Mr. J. Humphreys exhibited specimens of bone work. Mr. W. Royal also exhibited some old plates, amongst which was an upper bone plate made in Birmingham 50 years ago for which 50 gunieas were paid, this plate being a magnificent piece of workmanship. Several other specimens were shown.

A discussion ensued regarding Mr. C. Sims's paper, in which Messrs. J. Humphreys, and P. T. Naden took part.

Mr. W. J. Whittall was elected a member of the Society.

Mr. W. Palethorpe was unanimously elected chairman for the next meeting.

A paper was promised by Mr. E. Sims for the next meeting.

A vote of thanks to the chairman terminated the proceedings.

EDINBURGH DENTAL STUDENTS' SOCIETY.

At the December Meeting, William Wilson, M.B.C.M; L.D.S.;President in the chair. Mr. G.V.Watson, L.D.S., gave a lecture on Secondary Hard Formations in the Pulp Cavity, illustrating his subject by drawings on the black board, photo micrographs, and numerous specimens. He divided them according to their anatomical structure, and pecularities into varieties, (1) Nodular calcifications, Interior calcification, (2) Dentine of Repair, Dentine Excrescence, (3) Osteo Dentine, (4) Granular Calcareous Deposit.

He pointed out that the first mentioned, especially the nodular varieties, might be of purely physiological significance at one time, while at another, from certain causes detailed, it might become pathological. Dentine of Repair he showed to be compensatory tissue, formed as an effort of nature to limit disease or injury, and is always deposited in proportion to the extent of injury or disease.

Dentine Excrescence, he maintained to be pathological detailing cases and exhibiting specimens in illustration. Very severe neuralgic pain being a common accompaniment of this condition, which is found as frequently in sound teeth as in diseased. In regard to Osteo Dentine, mention was made that the dentine was developed from the odontoblast cells, while the osseous tissue had its origin from the connective tissue of pulp. The last variety, Granular calcareous deposit, was purely degenerative and commonly associated with atrophy of the pulp. The percentages of the different varieties found in

1000 teeth examined were given in detail at the close. At the January Meeting of the above Society, Mr. Gerard Black, L.D.S.I; gave a paper in which he advocated the more general adoption in practice of "Crown and Bridge" work. There were also exhibited models of interest. Mr. Campbell, of Dundee contributed one showing a conical supernumerary tooth between the two central incisors, and Dr. Wilson and Mr. Page showed specimens of lateral incisors, belonging respectively to the Permanent and Temporary series, each having a most strongly developed singalum.

BRIGHTON DENTAL HOSPITAL.

The Annual General Meeting of the Governors of and Subscribers to the Brighton, Hove, and Preston Dental Hospital, Marlborough-place, Brighton, was held on Thursday night at the Town Hall, Brighton.

The President, Dr. Ewart, occupied the chair, and there were also present, Dr. W. Harrison (Hon. Secretary to the Medical Committee), Dr. J. H. Redman, Dr. C. B. Stoner, Messrs. D. E. Caush, O. A. Fox, G. N. Gwatkin (Hon. Secretary), E. L. Norris, E. M. Tod, J. Wood (Hon. Treasurer), and Mrs. Harrison.—

The Chairman, in opening the Meeting, gave an account of the foundation of the Hospital.

Mr. Gwatkin then read the report of the Committee of Management. This stated that "In presenting their first report, which embraced a period of eighteen months, the Committee tendered their hearty congratulations to the governors and subscribers upon the great success which had attended the Institution since its opening, as testified by the statistics furnished by the medical quarterly reports. Although the Hospital had now been opened for a year and a half, there were, owing to its secluded position and the want of means for making it better known, daily instances of its existence being even now for the first time brought to the knowledge of those who required its aid. The Committee were thankful for the assistance which had already been given by the charitably-disposed. They regretted, however, that the Hospital had not yet been included in the list of charities which were the recipients of donations from 'workmen's boxes' and other collections, especially when they found from a perusal of the daily register of the operations performed that the work of the Hospital lay so much amongst the families of the working classes. Many applications for the services of the medical staff had, however, been refused on the ground that the applicants, owing to their social position, were 'ineligible for hospital treatment.' One source of congratulation was that the importance of a Dental Hospital was recognised by kindred organisations in the town, many of its patients coming recommended by the staff of other medical charities as well as from the medical officers of Benefit Societies."

The Committee then alluded to the loss through death of their first President, Alderman D. Smith, M.P., and to the fact that Dr. Ewart had accepted the post, and also to the loss of some of the medical staff, and continued that there had, however, been several important additions to the Honorary Medical Staff, Mr. S. Clifford Gibbons, Dr. J. H. Redman, Mr. E. M. Tod, Mr. John Wood, and Mr. W. R. Wood, jun., having been appointed Consulting Dental Surgeons, whilst Dr. C. M. Cunningham and Mr. E. L. Norris had been elected on the staff of Dental Surgeons.

In conclusion, the report stated that during the time the Institution had been opened no fewer than 2,017 patients had presented themselves, with the result that 2,720 operations had been performed.—

Dr. Harrison read the report of the Medical Committee, which stated that the work had been extensive and varied, covering nearly the whole field of dental surgery. During the eighteen months there had been 5,017 patients ; 445 fillings ; 1,620 extractions ; and 655 miscellaneous cases. The total number of operations amounted to 2,720 ; whilst out of the 2,017 patients 1,283 were females and 734 males, 763 being children.

The balance sheet was read by Mr. J. Wood and this shewed that the total receipts had been £94 18s. 1., and the expenses £39 10s. 9d. The liabilities were £20 for rent due last Christmas, and £8 7s. 4d. money advanced by Treasurer, but against this there was some money in hand, the actual deficiency left being £14 12s. 8d.

THE LIVERPOOL DENTAL HOSPITAL.

The twenty-seventh annual meeting of the Liverpool Dental Hospital was held yesterday, in the Town Hall. His Worship the Mayor presided, and there were also present the following members of the dental staff:—Mr. J. N. P. Newton, Dr. Whaite, Mr. C. T. Stewart, Mr. T. F. Austin, Mr. E. Davies, and Mr. Maplebeck. The other gentlemen present included Mr. John Cobham (chairman of the hospital), Dr. Dawson, Dr. Kisch, Mr. E. Paull, Mr. T. E. Priest, Mr. T. M'Cracken, Mr. T. F. Brakell (treasurer), Mr. W. L. Jackson (hon. secretary), Dr. Baily, Mr. David Campbell, &c.

Mr. W. L. Jackson, the hon. secretary, read the report, which stated that the total number of patients admitted since the foundation of the hospital amounted to 195,772. During the past year the number of patients treated at the head hospital and northern branch had been 21,634, including 8,075 children, and of operations 31,842, which figures were considerably in excess of those of the previous year. The committee were of opinion that it had now become desirable to place the hospital in a more advanced and efficient position as a training institution, and to increase its resources for dealing with the numerous cases involving the preservation of the teeth, which required skilled attention, and often a very considerable expenditure of time, and after consulting with the Medical Board, they had decided to recommend that the honorary dental staff be increased. They had much pleasure in stating that the Medical Board had obtained the consent of a number of gentlemen eminent in the local dental profession to fill the vacancies which would so be created, and also the vacancy caused by the death of the late Mr. W. J. Newman. The necessary alterations in the rules would accordingly be proposed. The extension of the institution's operations was causing a considerable increase in the penditure, and an augmentation of the annual income was necessarily becoming a matter of importance. The committee recorded their thanks for a legacy of £50 left by the late Mr. Robert Little and of his donation. The patients' voluntary contributions amounted this year to £98 9s 5d, a very satisfactory increase on previous years.

Mr. Brakell, the hon. treasurer read the financial statement from which it appeared that there was a balance in hand of £53 8s 1d.

The Mayor, in moving the adoption of the report at the close of the meeting a further donation of 50 guineas making a hundred in all—was received from the chairman.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the January Sittings of the examiner, Mr. William De Brassey Woodburn, Glasgow, was admitted a licentiate in Dental Surgery.

At the January meeting of the council, it was resolved that application for admission to the Dental Examination *Sine Curriculo*, would not be entertained after 31st December of the present year.

CLAIM BY A DENTIST.

Wood *v* Thompson.

This was a claim by Mr. Charles Wood, a dentist, of 37, Grand Parade, against Mrs. Thompson, of West-street, for £4 15s., for professional services rendered.

Mr. Evett appeared for the plaintiff, and Mr. Prince for the defendant.

The defendant gave notice of a plea for coverture, she being the wife of Mr. Robert Owen Thompson, and also paid £2 14s. into Court, but without admission of liability, and at the same time giving notice that when it was withdrawn it must be in satisfaction of the whole claim would be contested.

Plaintiff, on being sworn, stated that the defendant was brought to him by her husband, who stated that Mrs. Thompson was in business in West-street. He believed Mr. Thompson was in partnership with his father in St. James's-street, as the firm had done work for him. He operated on the defendant twice, then made a temporary addition of teeth to a plate, which she wore for a year or more, and afterwards made an entirely new plate.

In cross-examination, he admitted that he owed a bill to Thompson and Son, and that he was sued for this.

Mr. S. E. Power, dentist, stated that plaintiff's charges were quite reasonable.

Mr. Prince said the defendant was not in business on her own account, and had no separate estate.

His Honour said the husband was liable for necessaries, and it was a question if dental attendance was not as much a necessary as medical attendance.

Mr. Prince said the bill would have been paid had not the charges been excessive. The fact was defendant's husband simply worked for his father and not in partnership, and when plaintiff owed money to Mr. Thompson, senior, he wanted to put in this bill as a set-off. The business in West-street belonged to Mr. Thompson and his wife simply managed it for him.

Mr. Thompson, the husband of the defendant, produced the lease of his premises in West-street, and also said the whole of the stock belonged to him. He produced his certificate of marriage with the defendant. He took his wife to Mr. Wood, and nothing was said as to who would pay. He presumed he should have to. He was not a partner with his father. When plaintiff owed his father money he went to him to collect it, and then plaintiff wanted to set this bill off and pay £1 in settlement. At this time his bill had not been sent in. He could not have told plaintiff that his wife was in business in West-street, as he had not at that time got the business.

Cross-examined, he did not know that his wife had any separate property. At the time he married his wife she had a fancy stall in the Aquarium, and this was kept on for about six months after the marriage. After this they lived in a private house for about a couple of years.

When they disposed of the Aquarium business the greater part of the proceeds went for rates and taxes. They got the benefit of the little that remained. He was willing to pay a reasonable amount for the work which had been done.

By his Honour: He felt he was responsible for whatever should be paid.

Mrs. Thompson was called, and stated that the West-street, business solely belonged to her husband. At the time she first went to Mr. Wood her husband was in business at West Brighton, and she assisted him.

Ultimately a verdict was given for the defendant with all costs up to the present, and Mr. Thompson being joined as a defendant, the matter was settled by his paying the balance of plaintiff's account into Court, Mr. Evett stated that his client would not make any abatement in his charges.

Review.

Lectures on Certain Diseases of the Jaws, Delivered at the Royal College of Surgeons of England, 1887. By Christopher Heath, F.R.C.S., Hunterian Professor of Surgery and Pathology in the College, Holme Professor of Clinical Surgery in University College, London. Illustrated. Messrs. J. and A. Churchill, London.

These Lectures, which have appeared in former issues of the *British Journal of Dental Science*, form a most complete monograph upon a subject which Mr. Christopher Heath has made his own since his well known Jacksonian Prize essay. The importance to the dentist of an exact and accurate knowledge of the lesions incidental to the jaws, cannot be over estimated, and since but few dentists have leisure to acquire this knowledge from the widely spread sources laid under contribution, in the lectures before us, Mr. Heath's republication will prove a great boon.

Besides collecting into a compact form, the recent literature dealing with diseases of the Jaws, these lectures present the well seasoned clinical experience of many years' careful observations, made by a surgeon possessing an exceptionally large experience of these cases. The first lecture deals with Cystic Diseases, the second with Tumours of the Jaw, and the third with Diseases of the Temporo-Maxillary Articulation. The pages relating to the methods for overcoming pathological closure of the jaws, deserve the most careful reading by all dentists, as many of the operative measures detailed are not sufficiently widely known, and as a result many patients now go unrelieved who might derive great benefit from timely surgical interference. When it is considered how often "jaw cases" apply in the first instance to the dentist, it behoves him to know what is their pathology, in order that valuable time may not be lost before a surgeon is consulted.

Dental Vade Mecum, and Concise Notes on Anatomy, Physiology, Surgery & Chemistry. By James Hardie. Printed for the Author by Sir W. Collins and Son, Glasgow.

THE author in his preface states that his aim in the compilation of this small book is to facilitate the labours of the dental student—a very worthy aim. He also acknowledges references to "Tomes' Dental Surgery," Gray's and Heath's Anatomy, &c.; and in regard to this we may state that here we find the only indication in the book of any—even a superficial acquaintance with those books. But to return to the aim of the work and the manner by which the author intends to attain his object. To the treatment of the above-named branches of knowledge about 35 pages of (sixto) large print are devoted, divided into—Anatomy—Questions and Answers, Anatomy, Physiology, and Surgery,—Surgery and Medicine,—Chemistry. We will make a few remarks on these chapters in the above order.

Anatomy. The first page bears the title "Foraminæ Skull Interior." The second foramen is "crista Galli attachment of falxcerebri." The sphenoidal fissure is omitted (!), foramen vesalii is recorded. "Foramen alcerum posterior jugular vein,"—the 9th, 10th and 11th nerve and inf. petrosal sinus are quite omitted—another peculiarity of this skull, we have no doubt. Lastly, the "Mastoid foramen, stylomastoid artery and facial nerve." The mistakes throughout the book are thus glaring, and render the book valueless, if not harmful for students.

Questions and Answers.—The following extracts will give the reader a just appreciation of this portion :—

"Pharynx—Describe—Part of alimentary canal which lies behind larynx, its glands are of two kinds compound, no comma follicular, and racemose."

"Concussion and Compression of the Brain. Describe—Concussion, feeling of sicknesss, faintness, if severe loss of senses, cold, drowsiness, lasts 1 to 24 hours, Keep body and feet warm. Compression, breathes as if smoking, insensibility, bleeding at ears and nose ; cold to head, warmth to feet."

The following passage from the section devoted to Surgery and Medicine is very interesting :—"Closure of the jaws by cicatrix : and what else closes jaws? . . . Caused also by diseased teeth, and difficult eruption of wisdoms, causing spasmodic action of masseter and pterygoid ; also by wounding of thumb or great toe."

These three instances of unaccountably feeble grasp of what is termed general work will serve to show what estimation we must put upon the book.

One instance from the Chemistry section :—

"Ptyalin, an albuminous substance found in the mouth." What definition could be wider or more unsatisfactory ?

From page 39 to the end of the book (page 75) the space is devoted to very useless or very common-place remarks on a variety of subjects. One chapter is entitled "Teeth and their Structure." The teeth are written of, but we fail to observe explanations of their structure. It may be said of this portion of the book that the author has very successfully avoided touching heavily upon any subject which he is supposed to treat.

Upon the whole we consider it a very unfortunate thing the book has been printed,—for in the first place its orthography and etymology are far from perfect. We have foramin*æ*, foramen poster*ior*, aqua coloniensis in a R, and so on almost *ad lib*. Next, the inaccuracies in the matter are so numerous and flagrant, that they are scarcely conceivable. This book, supposing it obtained circulation, would lead the dental student into utter despair, and he would be deservedly contemned were he to attempt to acquire his necessary examinational outfit from its pages.

Hospital Reports.

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from Jan. 2st to Jan. 31st, 1887 :—

Number of Patients attended		**2586**
Extractions	**Children under 14**	**487**
	Adults	**1192**
	Under Nitrous Oxide	**729**
Gold Stoppings		**364**
Other Stoppings		**998**
Advice		**133**
Irregularities of the Teeth		**171**
Miscellaneous and Dressings		**442**
Total		**4523**

JAMES F. COLYER, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester, during the month of January, 1888:—

Number of patients attended		867
Extractions	Children under 14	626
	Adults	
	Under Nitrous Oxide	57
Gold Stoppings		32
Other Stoppings		98
Miscellaneous		334
Total		1147

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

Communications have been received from—

Secretary of the Odonto-Chirurgical Soctety; Secretary Dental Students Society; Mr. Percy N. Nadin, Birmingham; Mr. F. Colyer. London; Mr. Charles Buckley, Manchester; Mr. G. G. Biggs, Glasgow; Mr. J. Amoore, Edinburgh.

BOOKS AND JOURNALS RECEIVED.

Ohio State Journal of Dental Science, British Medical Journal, Chemist and Druggist, Pharmaceutical Journal, Dental Cosmos, Independent Practitioner, The Dental Review, Western Dental Journal, L'Art Dentaire, Dental Advertiser, The American Homœpathist, Souther Dental Journal, Reirie Odontologique, Deutsche Monattschrift, Zahuheilkunde, Footprints of a Profession, by Dr. Meriam, Dental Advertiser, Dental Record, Dental Register, Analis de la Socieda, D'Odontologica de la Harbana, De la Glossodynie. By Dr. Magitot, Considerations de la Kystes du Manillaire Superior. By Dr. Magitot, Revista Argentina de Ciencias Medicas.

British Journal of Dental Science.

No. 483. LONDON, MARCH 1, 1888. Vol. XXXI.

A NOTE ON EROSION.*

By S. J. Hutchinson, M.R.C.S., L.D.S. Eng., Dental Surgeon to University College Hospital, and Lecturer on Dental Surgery, at the London School of Dental Surgery.

I have entitled my short paper as above, because I am as yet unable fully to explain the appearances I am now about to describe; therefore it would perhaps be more correct to call it a *query* rather than a *note.*

For a very considerable time I have been studying this subject, which, along with pyorrhœa alveolaris and alveolar abscess, as yet lacks a really scientific and exact explanation, in spite of all that has been said and written upon these subjects.

I am, however, quite clear upon one point, that I have never before heard or read a description of the condition I claim to have recognised to be always present in true erosion, but of which I have failed hitherto in finding for myself a sufficient explanation.

I must define first what I mean by erosion, and that is *a wasting or denudation of the enamel and dentine which cannot be explained by friction, attrition, or caries*, nor satisfactorily, by the use of acid medicince, nor by the direct secretion of mucous glands, or even by the action of the saliva.

Erosion, properly so-called, usually attacks the enamel first, and very frequently is observable in its earliest stage by a circular facet-like mark on the labial surface of an incisor or for instance; this facet is usually somewhat depressed in the centre, but can be recognised when the facet is not more than one thirty-second of an inch in diameter, and the unvarying characteristic which I claim to have discovered is a curious film of discoloration, so attenuated that it can only be seen by the aid of a strong hand-lens, but when once recognised can never be mistaken, is *always* present in true erosion, but is absent from the surrounding healthy enamel. It can be scraped from the surface of the facet by a blunt burnisher, and under the microscope reveals, to me at least, nothing but small circular scales like epithelial scales, only much smaller; it is always quite black, but, as I have said before, the film or coating is so thin that the blackness is only perceptible by contrast, or when aggregated by scraping.

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* A paper read before the Odontological Society of Great Britain.

It adheres with such tenacity that brushing the teeth with a strong brush and powder will not remove it, so that it appears actually to be an impalpable layer of changing enamel or dentine which is disorganised.

I have here to-night the models of part of the teeth of two patients of different ages, for I find it present in patients of eighty and in patients of twenty to thirty. It is just the same in males and females, and in the mouths of smokers and non-smokers, in dyspeptics and in those who do not suffer from indigestion; it can be found in the pits on the grinding surfaces of molars which have to all appearance been worn down by *attrition*, but which yet have no antagonists in the opposite maxilla. It is equally present in those who take the utmost care to be cleanly and in those who do not.

It is equally present in those who use powders and in those who use only water or some liquid dentifrice, and is always just the same thin, almost invisible coating over the whole eroded surface, but never on the healthy enamel surrounding. I regret very much that I have not been able to secure an extracted tooth bearing these characteristics, for singularly enough I find that caries is not at all frequent in the same mouths as we find true erosion, and another curious fact noticeable is that osteo-plastic fillings often last longer than usual in these mouths.

That it does not seem explicable by the action of any mucous secretion is because we find it on surfaces not always in contact with the mucous glands; for instance, in model I. the erosion is entirely confined to the palatal surface of the upper incisors and canines, and is quite absent from the buccal or labial surface, where we find it in model II.

It can scarcely be explained by the action of the saliva, as we should then expect to find all parts of the teeth equally affected.

Chemical action alone, is almost precluded by the very singular shapes the eroded surfaces assume, though we are tempted very much to believe that the black film may be a sulphide.

It would be very satisfactory to proclaim a bacteriological origin, and my friend Dr. Dudley Buxton has very kindly promised to conduct some "culture" experiments for me, to see if he can get any definite results.

This explanation would be easily accepted, for we can understand how a centre of bacterial energy could develop even on a smooth surface of enamel, and gradually spread eccentrically in patches of various shapes.

However this blackish film may eventually be explained, I can only say in conclusion that I am not prepared to state on the present occasion, whether it is cause, result, or coincidence; but I am quite sure it is always present, and I sincerely hope on some future occasion to give the result of my further researches, and to satisfactorily account for the *black film of erosion.*

INFLAMMATION.*

By Mr. PRITCHARD.

MR. PRESIDENT AND GENTLEMEN.

It was with no inconsiderable hesitation, that I chose Inflammation as the subject of my paper, on account of the difficulty I experienced in deciding how far it would be advisable for me to advance in a subject which, it is patent to you all, I cannot treat in its entirety, in the short time at my disposal. Therefore I thought it advisable to confine my attention to—"*The general features of inflammation with a few notes on inflammation of the dental periosteum*" which I think is not sufficiently understood by the majority of us, considering how frequently it happens, that the Dental Surgeon is the first person who has the opportunity of treating Inflammation, when present in the mouth.

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* A Paper read by before the Dental Students' Society, London School of Dental Surgery, Leicester Square.

"Inflammation may be defined to be the succession of changes which takes place in a living tissue as the result of some kind of injury, provided that this injury be insufficient immediately to destroy its vitality."

The first changes we are at present able to discover at the commencement of Inflammation are in the blood vessels and circulation. Some authors assert that the arteries, capillaries, and veins *contract* prior to dilatation, whilst others contend that the dilatation is the first change, and,—as Mr. Underwood says in his valuable little handbook,—"there is no previous contraction." Whichever the case may be, the "previous contraction" of some authors, must be very slight indeed not to be more universally admitted.

Next we have the emigration of the corpuscles both white and red (though fewer of the latter) through the vessel walls, and exudation of liquor sanguinis.

This emigration, or diapedesis as it is sometimes called, is perhaps best observed in the mesentery of the frog, which having been spread out on a slide specially prepared, the circulation may be studied and the following phenomena observed :—

In the capillaries, the blood current will be seen to be extremely irregular, it stops, then recurs and sometimes even runs back in the contrary direction. Numerous white and a few red corpuscles are seen to slacken speed, some of the white becoming quite stationary, due, some authors believe, to "an adhesive layer on the internal walls of the vessels," whilst others ascribe the phenomenon to "the change of shape of the white corpuscles and the amœboid processes which they throw out and by means of which they attach themselves to the walls of the vessels." I think, however, it has been pretty clearly proved, that emigration of the white corpuscles (of which, their adhesion to the vessel walls is the first stage) is due to some alteration in the vital properties of the walls of the blood vessels, and not to changes in the blood. The retardation of the blood current may be divided into three areas ;—*Firstly*, a central area the most injured where there is complete stagnation, (inflammatory stasis) generally accompanied by coagulation of the blood, and where no migration of corpuscles occurs : *secondly*, an area external to the one just described, where the circulation is very slow, but where a few white corpuscles make their escape. And *thirdly*, an outermost area where both red and white corpuscles—especially the latter—emigrate in considerable numbers from capillaries and veins, and where the blood current is fairly rapid.

Some hours after the commencement of the experiment, the various phases of diapedesis of the white blood corpuscles may be observed. Some of these, which are at first seen clinging to the vascular wall, will be found to have protruded from the lumen, the part which thus projects into the interior of the vessel-wall progressively diminishing until nothing is left; a little irregular shaped mass however, appears, and increases in size on the outer wall of the vessel, as that on the inner decreases. The intra-vascular portion of the migrating corpuscle will be found to be regular and spherical, the external portion being amœboid. It must not be inferred from what I have just said, that diapedesis of the white and red corpuscles appertains solely to Inflammation, it occurs in the physiological state—though not perhaps to such a degree --as is evidenced by the presence of white corpuscles in connective tissue, and red in lymph.

Inflammatory effusion, in the earlier stages of Inflammation, the exuded liquor sanguinis, which constitutes the inflammatory effusion, appears as a much clearer fluid than it does in the later stages, due no doubt to the fact that at the commencement of the phenomenon known as inflammation, there is not such a free emigration of leucocytes, as there is when the inflammatory process is more advanced, for I take it for granted, that it is the presence of the leucocytes in the more advanced stages, that gives to the inflammatory effusion its opacity. With regard to the cause of the exudation of liquor sanguinis, little is known, except that exudation, like the emigration cannot be due to excessive blood pressure, as some authors have asserted, because the blood-pressure inside the vessel-walls in inflammation is known to be less than normal.

Changes in nutrition. "The alterations in nutrition which accompany inflammation are, in certain tissues, characterised by an exaltation of the nutritive functions of some of the cellular elements involved in the inflammatory process."

When the cells become possessed of this increased activity, their protoplasm enlarges, divides and subdivides, it also becomes cloudy, so much so, that at times the nuclei it contains are totally hidden from view. The new cells thus formed by subdivision are not so well developed, and therefore degenerate quicker than the old ones of which they are a part. The proneness of cells to proliferate, depends a great deal upon their physiological peculiarities. For instance, cells which are normally active, will proliferate to a greater extent in inflammation than those in which, in the natural state, no active changes take place. This increased activity in the cellular elements, occurs generally in the earlier stages of inflammation, although there is this increased activity going on, there is yet an impairment of nutrition, which is, to a certain extent, forced to occur when a tract of tissue is affected by stagnation of the circulation, and which we must not overlook ; for, supposing the tract to be fairly large and the stasis complete, gangrene may be the result.

Varieties of Inflammation. These depend chiefly upon the intensity of the process, and the susceptibility of the tissue affected. Thus, when the phenomena of emigration and exudation are pronounced, and the formation of pus considerable, the inflammation is called acute, lasting not more than three weeks. The sub-acute variety lasts a little longer, that is to say, five or six weeks at the outside. The chronic form of inflammation is much less intense than the two first mentioned, its duration is over six weeks, and it is in this variety chiefly, that the "new growth," of which I shall presently speak, takes such a prominent place. And now as to the terminations of inflammation.

Resolution. To procure this most favourable termination two conditions are necessary. *Firstly*, the removal of the injurious influence, and *secondly*, the removal of the inflammatory products. This latter is accomplished by the lymphatics into which the inflammatory effusion and most of the leucocytes pass, the remainder of the corpuscles undergoing fatty degeneration. Clearly then, if the exuded liquor sanguinis be so rich in corpuscles as to engorge the lymphatics, the chances of resolution will be greatly lessened. *Organisation* occurs when the inflammatory process is not intense enough to cause the formation of a large quantity of pus, yet sufficiently intense to produce a fairly free migration, and fibrinous exudation, for the "new growth" before mentioned cannot be formed without the plastic lymph, of which the leucocytes and fibrinous exudation are factors. Time will not permit me to enter into the different stages by which this new growth is formed ; suffice it to say then, that the organization is principally brought about by the processes thrown out by the cells, which processes, becoming branched, join with their neighbours, thus forming a reticulum ; at the same time a new system of blood vessels is formed, which permeates the new tissue.

Suppuration. This occurs in the more acute forms of inflammation when the inflammatory effusion and emigration have been profuse. The presence of pus causes the liquefaction of the tissues with which it comes in contact. But if the pus has remained long in the tissues, it may undergo certain fatty changes and thus become absorbed. Or it may, on the other hand, dry up into a caseous mass, if it has been long constricted in a closed cavity, and become calcified.

And now a few words upon the second part of my subject, *Inflammation of the dental Periosteum.*

Firstly, then, let us consider the changes in the tissues which occur in periostitis. The primary stages are similar to those in other parts ; the lining membrane of the tooth affected will be found upon examination to be thickened, the vessels congested, and effusion into the adjacent tissues of have taken place. In very severe cases of periodontitis, pus is formed and the "breaking down" of the tissue at the spot where the pus accumulates, is the result. Periostitis may be either acute or chronic, one form often being a sequence to the other. In the chronic form the offending tooth is often noticeable by the presence of a coating of salivary calculus ; it will also be found to have a darker colour, and to produce sometimes a distinctly duller sound on percussion than its more healthy neighbours.

Dental caries, rheumatism, syphilis and scrofula, are among the principal causes of Periodontitis.

When dental caries is present, the septic matter is no doubt the agent which produces inflammation. Periostitis, when due to rheumatism, rarely advances as far as suppuration. Mercury is another very common, though indirect cause of inflammation of the dental periosteum. Sloughing is very common in this form, especially if the mercury is persistently taken.

Whether inflammation can arise independently of any septic matter in the periosteum of a tooth, has been the subject of much discussion ; but I see no reason why it should not occur *de novo* in the dental periosteum, as it does in other parts of the body ; and as Mr. Coleman says, "it is possible, when occurring to a perfectly sound tooth without any conditions which may account for it, that it may arise from embolism of the nutrient vessels of the pulp."

As to the diagnosis and treatment of inflammation of the dental periosteum, I do not intend to speak, for there are few of us, I should think, who have been lucky enough to escape altogether, this peculiarly painful affection; and even they, by the descriptions daily given them by their patients, must be only too familiar with the diagnosis and consequently the treatment, not to feel that a repetition of it here would be a needless tax on their patience. Suffice it, then, to say that in the more severe cases, our treatment should be *general* as well as local.

My paper has, perforce, been extremely superficial, but if, perchance, it inspires some of us, however few, with a desire to extend our knowledge in the subject, and to establish as facts, what at present are mere theories, it has done a good work, and more than I expected.

THE PATHOLOGY OF ALVEOLAR ABSCESS.

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(*Continued from page* 156).

3. *Suppuration.* When the inflammation is intense or prolonged, the leucocytes accumulate in sufficient numbers to form pus, at the expense of entirely destroying the tissue at that spot. This is what has already been referred to as the "breaking down" of tissue. The old idea of an alveolar abscess—and one still tenderly nursed—was, that a *pyogenic* membrane was formed which had a special function of secreting pus, the latter denuding the fang extensively. Even now, the enlarged periosteum often clinging to an extracted root is looked upon as the wall of an abscess sac, and this wall is mysteriously connected with any purulent discharge in its neighbourhood. We all know how a chronic alveolar abscess may take on active intense action with the result of a large accumulation of pus; but, as a rule, the action is of a low type, and the area of tissue broken down is comparatively small. I am compelled to disagree with the usual account given in text-books about the denudation of fangs which are

supposed to be bathed in pus as a regular thing. In extreme cases where the hard tissues are undoubtedly necrosed (in the true sense of the word), the fangs will of course be in actual contact with pus and largely denuded; but that this is a common factor in ordinary cases I deny altogether. Pus is supposed to be endowed with the power of absorbing the tissues with which it comes in contact, and by virtue of this power it has been considered as the chief factor in the absorption of roots. I believe, however, that the latter is due to another agency altogether which will be considered presently. The *nature* of the discharge from an alveolar abscess varies in character from what is known as "laudable pus" to a thin sanious exudation. It has a strange *phosphatic* odour peculiar to itself which cannot be accounted, for as far as I am aware, any more than the peculiar odour of sweat in acute rheumatism; like it, however, it has its own diagnostic value. There is one point in connection with alveolar suppuration which becomes important clinically, and that is that no pronounced inflammatory discharge from a periosteum can be detected except the pulp in connection with it be completely broken down. A local suppurative periostitis such as I have described may be altered in character and develope into a serou-cyst with a thin papery bony wall; and in several of these cases of maxillary cyst I have been enabled to distinctly trace the history of alveolar abscess.

Change in Cementum. The phenomena of absorption and addition to the surface of cementum are present in a marked degree in connection with chronic alveolar abscess. The latter condition has been described as *exostsis*, *hyperostosis* and *hypertrophied cementum*. The last term is absolutely incorrect, for hypertophy only occurs in connection with the increased *functional* activity of a part; the two first are misleading. In lieu of something better, I would suggest the term *cementosis* which is more expressive of what actually takes place. Absorption and cementosis may go on separately, synchronously, or alternately in the same root; and it seems quite impossible to decide upon the exact factors which determine and govern the various processes. As a broad general rule, I think it may be stated that a slight degree of irritation may produce cementosis, whilst absorption will depend upon more active inflammatory action.

1. *Absorption.*—As already stated, absorption of a root may proceed in a most erratic fashion, and inasmuch as a deposit

of cementum may be taking place at the same time in the same specimen, it becomes somewhat difficult to trace the process. It is an easy matter to examine an inflamed periosteum in a comparatively fresh condition, but, unless the corresponding surface of the tooth be also observed at the same time under the microscope, we are apt to imagine a local condition which may not possibly exist. The various diagrammatic drawings which we see scattered about in various works are only too often testimonies to vivid imagination, rather than to truthful observation. If we want to find out what really does take place in the pathological absorption of the root, a section must be cut of both root and membrane, so that their exact relationship may be observed. This entails prolonged manipulation which cannot but be prejudicial to the soft tissues; hence the difficulty by which we are handicapped. Nevertheless, a good deal may be grasped, and the details supplied may be supplemented by fair inferences. There is one fact that obtrudes itself upon anyone who has studied the microscopic appearances of absorption of teeth, and that is—that *pus* has little or nothing to do with the immediate process. The surface of the hard tissue presents innumerable *absorption facets*, forming in section, segments of irregular circles, and in favourable specimens the individual facets are seen to contain large protoplasmic masses with a large number of nuclei, these giant cells are backed up by cells similar in character but smaller in size, whilst beyond they imperceptibly graduate into ordinary leucocytes, supported by a fibrous stroma; and the direction of the fibres is worthy of note, as being in the *direction of the ordinary cells*, and often at right angles to the fibrous tissue surrounding the root. That these cells are recruited from the leucocytes there can be no doubt, but what the nature of their solvent action is, remains at present an unsolved riddle.

2. *Cementosis* is the result of a low inflammation, as instanced in the case of teeth which cannot be detected as unhealthy in the mouth, whilst absorption is undoubtedly the result of a higher inflammatory action. The processes are, therefore, dependent upon local nutritive conditions of the alveolodental membran, and variations of these conditions must account for the variation of the processes. The *varieties* of cementum deposited may be grouped into four divisions:—(1) *Granular*, (2) *Laminar*, (3) *Lacunar*, (4) *Irregular*. All of these varieties may be found in cementosis as the result

of chronic thickening of the periosteum in a single specimen. In the normal cementum covering ordinary teeth, where the tissue is thin it will be found faintly granular and almost structureless, whilst in positions where it is thick we have lacunæ and canaliculi pretty regularly distributed. The cementum found in conical molars where the fangs are glued together will generally be found to be of the granular variety. The *laminar* variety stains deeply, and looks as if wavy fibres running parallel with the surface of the root had become calcified; it is common in cementum covering the roots of teeth which have been slightly inflamed—as in the case of teeth with healthy pulps. *Lacunar* cementum is not found in large quantities on roots which have been the subject of tolerably intense inflammation, but occurs in isolated patches, and the lacunæ and canaliculi are irregularly distributed. The *irregular* variety on the contrary, does appear in these cases, and suggests the calcification of a jumbled mass. Both this variety and the *granular* have faint linear markings. I am unable to find out what variety of circumstances regulates the type of tissue formed, or to discover how the cell-elements differ either in size or arrangement in producing the different varieties. It has been suggested that the genetic cells (osteoblasts) are in no way to be distinguished from absorption cells (osteoclasts), but I think they may be distinctly differentiated. In the first place, they are distinctly smaller than the giant absorption cells; and in the second place, they are supported by a tissue whose fibres generally run *parallel* with the surface of the root. Should, however, the fibres happen to deviate from this general direction, the linear marking will correspond with such deviation.

Changes in the alveolus.—The bone lying in immediate contact with an inflamed dental periosteum is liable to become absorbed, and a specialised tissue performs this process in a precisely similar manner to that which obtains in the absorption of cementum. The space thus gained is filled with granulation tissue, and the inflammation may eventually cut off the vascular supply of a portion of bone which then becomes necrosed. The medullary tissue, with which the alveolus may become riddled, cannot be distinguished in any way from the continuous tissue surrounding an inflamed root.

Changes in dentine.—There has been, and there still exists, a great conflict of opinion as to whether "vital action" occurs in dentine, and whether strictly pathological conditions may be observed in this tissue apart from any changes which can be accounted for by purely chemical action. The question has arrived at its acutest stage in discussing the phenomena of caries; but, as caries and alveolar abscess have no intimate relation, the one to the other, I intend giving the former a wide berth. It will at least be a slight novelty—if of less interest—to enquire if any changes occur in dentine as the result of periostitis; and if so, whether they may be considered as pathological. It has been commonly noted that the dentine of the roots of teeth in old people has a peculiar horny, translucent appearance, quite distinct from the ordinary characteristic opacity of ordinary teeth; and this is also true of the roots of teeth exposed to long periosteal mischief. If the latter be carefully examined in section, there appears to the naked eye a distinct outer belt of tissue more transparent than the rest of the dentine, and less susceptible to staining. The microscopical appearances confirm the existence of this *transparent belt*, and one naturally seeks for an explanation. In trying to account for the "transparent zone" in connection with caries, several theories have been advanced to explain a condition which appears to be allied to that under consideration. The simplest way of explaining the increased transparency is to ascribe it to calcification of the dentinal fibrils, and this is the ground taken up by Dr. Magitot. Leber and Rottenstein take up the direct negative, and say that the transparency is due to decalcification. Professor Wedl seems inclined to deny the theory of calcafication, and says he has succeeded in staining the tubes and their contents of the transparent teeth of old people with carmine. Other workers have experimented in this direction, but time will not permit of an analysis of their opinions. Mr. Charles Tomes, to whom we are indebted for so much research in the field of dental pathology, appears to disfavour the idea of vital action in dentine—at least, that is the impression conveyed by a careful perusal of his latest account of caries.

To be concluded.

ON EROSION.

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(*Concluded from page* 164.)

In order to render clear the peculiarities which I have observed in the enamel of teeth suffering from erosion it is necessary that I should trespass upon your patience for a few minutes, and call attention to the appearance of normal human enamel as I have observed it.

The sections have been prepared with the desire to avoid all illusory appearance created by the process of mounting. Some have been stained with chloride of gold, and some with nitrate of silver, but the greater number have not been stained at all, and they have all been ground down, and not softened in acid, because when powerful reagents are used, as is necessary in silver staining, or great heat as in gold staining, or hydrochloric acid as in softening, it is impossible to be sure that the appearances observed may not be the result of processes of section cutting and mounting. A full light with no diaphragm has been used in observing them, because I have assured myself that the wonderful appearances that may be observed with a diminished light are mostly illusory. Lastly, I have not noted surface markings, but only changes below the surface of the section.

The enamel fibres are never, so far as I can make out, in actual apposition, but are always separated from each other by clear interspaces, which are about one-tenth the size of the fibres. In the great majority of cases these interspaces appear to me to be empty, both in stained and unstained sections, but sometimes I have seen what appeared to be a thin line of something in the interspace, and such lines have generally appeared to be composed of fine dots.* This is especially so in enamel stained with silver nitrate. I have never seen anything like a branch springing from such an interspace and communicating with another, unless it be where some few fibres curve obliquely past longitudinal ones, and the interspace round them has the appearance of a branch. The enamel fibres themselves are finely granular, they are covered with minute dark dots, and that which is between the dots is lighter, but not nearly so light as the interspace. When seen in transverse section, the interspace and the granularity are still obvious,* the commonest shape being round or oval, but never in human enamel, so far as I have seen, approaching anything rectangular (in the rat they are apparently hexagonal). In certain places, or rather tracts of enamel, the fibres are traversed by striations proper to themselves, these striations are caused by slight aggregations of the dark dots I have before spoken of; they never coincide with any alteration of the thickness of the fibre, that is, they have nothing to do with varicosity, but traverse the fibre much as the striations of striped muscle do, only they are often oblique in direction. Sometimes these striated patches are tinted yellow; they are more conspicuous where the enamel fibres curve very much. In some conditions of enamel, especially in very young enamel, there are patches in which the granularity before alluded to is coarser, the dots bigger and more distant from each other, and in such enamel chemical analysis shows that the proportion of lime salts to organic matter is less.

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* I have sometimes seen an appearance of something having a contour lying in the interspace, and separated on either side from its margins, but never anything stained and differentiated as a fibril is in a well-stained section.

In some enamel dark lines are seen, bearing some rough relation to the contour of the tooth, which are known to every one as the brown striæ of Retzius. Whether these lines are or are not due, as is generally stated, to stages in the development of the tissue, when highly magnified they plainly consist of coinciding points of very coarse granularity, similar to that found in infant enamel; the interspaces are much larger at these points, and the edges of the fibres are very strongly defined, so that it would be easy to suppose that something occupied the interspaces.

Lastly, in the enamel of those teeth suffering from erosion which I have examined, this granularity is present in an exaggerated degree. The dark dots seem in the affected patches to have run together much as bubbles might, and not unlike drops of rain on a window-pane, and the confusion of the substance is so great that the interspaces are occasionally almost if not quite lost. This appearance is confined to scattered patches of the enamel.* In one of the gold-stained specimens the stain seems to have penetrated some of this disorganised enamel; but I am unwilling to speak strongly about it because some of Nasmyth's membrane, which is highly stained in the neighbourhood, may have got behind the enamel and given it a false appearance of staining. In another case the stain has penetrated, but there is no appearance of any object stained, but only a diffused tint, recalling the appearance of developing enamel before calcification commences.

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* The axes of the fibres do not seem to present any special structure, but they are lighter than the margins. The fibres differ much in size and shape.

In these observations I have been careful never to describe appearances seen on the surface of the sections, but have confined myself to portions of the section seen by focussing in a little, thus arriving at strata that were free from suspicion as far as accidental appearances go.

I have spoken so far entirely of the appearances as affecting enamel, for I regard erosion as an enamel disease. The dentine that has suffered shows only the appearance of splitting between the tubes, but there are none of the signs of caries; in fact, where a patch of caries attacks the eroded surface the contact of the enlarged tubes is very striking. The tubes appear in places to open with trumpet mouths on the eroded surface, and in one specimen the matrix is curiously striated; but these appearances are not constant.

To sum up these microscopical observations they amount to this, that the nature of normal enamel is to be faintly granular, and that this granularity is rather pronounced in the transverse striations of the fibres. In the brown lines of Retzius this is greatly exaggerated, the individual granules being larger and wider apart. In enamel suffering from erosion (and in a less degree in infantile enamel) this granularity it still more conspicuous, and in some patches appears to have quite destroyed the identity of the fibrils. In such enamel the interspaces are larger, and this is also markedly the case in the lines of Retzius. Whether the appearance is the result of the action of the agencies which cause the erosion, or whether it indicates a condition which renders the tissue specially liable to the mischievous action of these agencies, I cannot say; but I think it is the latter, because the changes are not peculiar to the eroded surface, though peculiar to the eroded teeth: they exist far below the surface, and represent, to my mind, types of what had been present at the surface and had invited destruction.

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* The darker dots of the transverse striations seem especially prone to this running together, and in one case this is very conspicuous in the immediate neighbourhood of a more extensive and probably more mature change.

It is interesting to note that bacteria do not seem to meddle in the matter beyond such influence as their acid-producing functions may exert. As soon as the dentine becomes exposed, if, as is often the case, the injury approaches the shape of a cavity, some resisting portion of enamel persisting and producing the result of an undercut, food lodges, undisturbed fermentation takes place, and caries is the consequence. Where acids continually wash over this weakly formed enamel, but still nothing lodges, the effect seems to be erosion; where, on the other hand, the decomposing substances are at rest, caries results. Dr. Black found, both in his experiments with a continuous acid current, and in his clinical observations, that the various parts of the teeth suffered from erosion in proportion to their exposure to currents, and not according to their anatomical situations; thus, though the labial surfaces of incisors suffered most, yet, if a tooth were abnormally placed, that part which *occupied the place* of the labial surface suffered.

In the case figured by Dr. Black, as in my cases, and also in a very typical one the models of which have been kindly lent to me, there is a coincidence in the erosions of neighbouring teeth that cannot be overlooked; it looks not only as if a file had destroyed them, but also as if *one* file had destroyed a whole row. This is much in favour of the view that a current is essential to the change.

These facts, though not perhaps sufficiently substantial to form the basis of a theory, are eminently suggestive.

The vexed question in discussing the etiology of erosion, is whether the external agencies that produce the change are assisted by any structural faults in the formation of the tooth attacked. The observations of which I have endeavoured to give you a brief *resume* incline me to believe that they are. Those teeth that I have examined have all displayed special characteristic defects in their enamel structure, resembling in an exaggerated degree that which I have found in the enamel of infants, and in the lines of Retzius.

The active agencies seem from an examination of the recorded clinical phenomena to be an acid state of the buccal secretions, and the opportunity for free movement of those secretions to wash away the *debris*, the use of injurious tooth powders in the human subject, and in the case of the sealsf the pernicious habit of rolling pebbles and sand about in their mouths, may no doubt assist the process; but I feel convinced that it is the defective condition of the enamel itself that renders it liable to undergo the obscure and interesting form of destruction which we know as erosion, the examination of which will, I hope, some day form the subject of a more conclusive paper than that which you have been kind enough to listen to to-night.

EDINBURGH DENTAL SCHOOL'S SOCIALS.—The second "social" in connection with the Edinburgh Dental School, took place on Saturday evening, January 28th, when the students appointed Mr. Frederick Page, chairman for the evening, with Mr. A. K. Brittan, one of the junior students acting as croupier. An agreeable evening was passed and matters of interest among the students discussed.

REGULATING TEETH.—The Editor of the *Dental Review*, says:—All dentists, at times, are prone to ride hobbies, and in so doing lose sight of some practical things that they had well nigh forgotten. For some years we have been using the Coffin split-plate for expanding arches, or some other device than a jackscrew. Recently, however, we had a case where the bicuspids of the superior teeth closed within the arch on both sides. The teeth were not long-crowned and the split-plate did not stay in the mouth very well. The boy was not persistent in keeping the plate in his mouth and very little progress was made. After wasting some time, we concluded to make a new plate with a jackscrew extending across the roof of the mouth, and see if it would not do more effective work. The plate was made and cut in halves. In a week's time the arch was spread so that the bicuspids were in a line, and we are at this time merely holding them in position. The moral of this little article is, use your resources in order to attain success.

British Journal of Dental Science.

LONDON, MARCH 1st, 1888.

DO TITLES MAKE THE MAN?

In times of old a fierce wrangle convulsed the puny breasts of certain puissant persons, and the subject of the dispute was the difference which existed between tweedledum and tweedledee. Hot raged the fire of controversy, and the disputants ranged tweedledum against tweedledee, alas to no purpose, for the arbiter averred no tangible difference existed between the two. History, as is her wont, repeated herself, and empty questions such as that which rent the world during the epoch of Tweedledum and Tweedledee, are now being bandied about with the venom begot of narrowness of mental grasp, and the energy worthy of another and a better cause. We are asked to believe that dentists must consider themselves a peculiar people, and if their self-appointed prophet is to be believed, a very stiffnecked people; they are to cling to a diploma, sometimes erroneously called a "degree" and rely upon the œgis of this, the L.D.S., to carry them safely into the forefront of society. Those who hold this L.D.S. are to claim as their right to sit cheek by jowl with their medical friends, and in the words of the Moabitess to say "whither thou goest thither will I go," and this because they hold the "only dental diploma." Now all this, were it said without an assumption of special knowledge, and the special alleged sanction of an influential following would not merit notice. Even the acrimoniousness and crass rudeness of the speaker would command but the pitiful scorn which the shrewish Miss Squeers lavished upon Nicholas Nickleby when she averred she "pitied his ignorance and despised him," but the writer in question brings forward arguments which when they have been laboriously dug out of the litter of words, with which they are overlaid, appear specious and taking to the "L.D.S. only." One must be a little more than human if one is able to turn a deaf ear to the charmer, who tells in dulcet strains, that he, who, one fondly thought was a head and a half taller, is in fact only spuriously elongated, having added a cubit to his stature by assuming a footstool—and that footstool the M.R.C.S. Many persons misled by a jangle of words never seem to appreciate, that success in life depends not upon the number of letters a man can legally append to his name, but upon the acuteness of his mind, and the dexterity of his hands, coupled with firm resolution and untiring perseverance. The Victoria Cross men write V.C. after their names when the battle has been fought and won. So is it in professional life. In Medicine, Surgery, Dentistry, in Arts and Sciences, men study the subject which they propose to pursue during their life as a profession, and when they have mastered their principles and practice, they become examined, and, if they are approved, are docetted L.R.C.P., or M.B., M.R.C.S., or B.S., L.D.S., B.A., or B.Sc., as the case may be, but such a diploma or degree goes for very little beyond a guarantee of a certain knowledge of certain subjects. It does not as such stamp a man as a gentleman, nor does it give him the entrance, *as a right* into society. In the case of university degrees, there is usually a tacit understanding that their assumption stamps the holder as, at least, a man of culture, whereas diplomas are mere trade protection labels, that the diplomate is capable of doing his technical work properly. It has been attempted with more or less success to correct this state of things by insisting upon a preliminary examination in arts, thus guaranteeing a fair general education, but as very many of these preliminary tests are of a very low grade this wise enactment is defeated in spirit although obeyed in the letter.

Thus an L.D.S., or an M.R.C.S., or an L.R.C.P., or an

L.S.A., may be an expert dentist, surgeon, doctor, or apothecary, and yet be painfully deficient in general culture and undesirable as a companion among educated men of refined feeling. But assuming an individual has mastered the technicalities of his calling, and has achieved his diploma—the L.D.S.—has he any reason for or against continuing his studies, and taking the M.R.C.S? Titles, we have said, do not make the man, then why bother our students to prolong their novitiate, and assume what is on all hands admitted not to be a dental diploma, the M.R.C.S.? Why encourage the practice, by refusing, at least out of the provinces, to have an L.D.S. rammed down our throats at general hospitals, and insist upon the dentist thereto attached, being a surgeon as well as a dentist.

The course has been soberly and seriously adopted and valid enough reasons exist for it, reasons sought out and urged by those who not only have the cause of the dentist and dental student at heart, but possess the influence and philosophic acuteness so strikingly absent in certain propagandists of an hysterical trades-unionism grafted upon the sober profession of Dentistry.

We must, however, postpone for the present, entering more fully into the reasons, why we urge upon the students the advisability of taking the M.R.C.S., for the present we advise them to take to heart the dictum, which we assure them that life's experience will prove true, it is the man that succeeds, and not the qualifications that bring success.

A Post-Graduate Course for Dentists.—It is with much pleasure, that we learn that the Dental Hospital, in Leicester Square, has resolved to give a post-graduate course. The Staff have determined to give a series of Lectures and Demonstrations in April next, which will be open to all registered practitioners. The aim has been to make the course purely practical, and of such a nature that men who have already mastered the usual technicalities of their craft, can, in a brief space, acquire an insight into the newer methods and more refined appliances of scientific dentistry. We do not doubt that many will find time to avail themselves of what it unquestionably a great boon, and ought to receive a considerable support from the large number of dentists, who for the past few years have been clammering for such a course.

The Duke and the Dentist.—One of the difficulties experienced by the executive of a journal devoted to the interests of an association, is the desire the less high-souled among the members have for rushing into print. Of course the large majority possess good taste enough to see that self-laudation, and the vulgar egotism which loves to see its name associated with those of titled persons, are despicable and unworthy of professional men. One must, then, deplore the necessity, if such there be, for publishing a farrago about a certain irrepressible dentist inflicting his society upon "His Grace the Duke," for an hour at a stretch. "The noble president," having been palavered, a gallant colonel had to submit to an hour's interview; and so are four closely printed pages frittered away over "His Grace," and "the Colonel," and flunkeym, such asmight make Thackeray come out of his grave on purpose to bringout a revised edition of the Book of Snobs. Surely all this if pardonable in a small local paper, is out of place in theadmirable and enlightened organ of the British Dental Association.

Veterinary Dentistry.—Some years ago a Parisian spectacles maker hit upon a novel idea of advertising. He made an admirably fitting pair of goggles for his "harmless necessary cat" and poor puss would sit daily at the shop door and blink through her glasses at the sun. But this Alphonse no longer is peerless, for horses now have pressed their claims upon the skill of specialism. A New York veterinary surgeon says, that wonderful progress has been made in the art, and anything that can be done in human teeth can be done in horses' teeth. "I heard of a case a few days ago, he avers, when this new invention was tried with perfect success. The horse's teeth were pulled out one by one, and in the cavities new teeth were inserted. They were literauy cemented in ; and, although the gums were sore for a week, they finally hardened, and now give the animal no pain. Filling horses' teeth and cleaning them are common things now, and in a few years the practice will be all the rage.'

DEATH OF A LADY AFTER HAVING SEVENTEEN TEETH EXTRACTED.—On Saturday, June 11th, Mrs. William E. Berry, living near Sparta, Hancock county, Georgia, had seventeen teeth extracted. She retired in the evening, feeling badly and nervous, and during the night died. She was a young married lady. Her death was unaccounted for. It is thought by some that the extraction of the teeth caused her death. The extraction was done by Dr. Buck, who travels from place to place extracting teeth without pain by use of a preparation he calls Electro-dentos. The anæsthesia is effected by applying the preparation to the beaks of the forceps. Dr. Buck is not a practising dentist, but devotes his time to extracting teeth and selling rights to dentists. He claims that it relieves them entirely. Now, as to whether the death of Mrs. Berry was caused from the effects of his preparation, or was simply produced by the nervous shock, or some other condition of her system, is a matter of conjecture. This narrative we owe to an American Contemporary.

A NEW HÆMOSTATIC.—The *Journal of the American Medical Association* advocates the use of geranium maculatum as a styptic, and claims for it a superiority over all others. Hæmorrhage resulting from the extraction of a tooth or teeth can be promptly arrested by filling the socket with a pledget of cotton saturated with the undiluated extract. Owing to the large percentage of tannic acid which it contains, it is an effective antidote in cases of poisoning by iodine, mercury, or aconite.

Abstracts of Foreign & British Journals.

THE OHIO JOURNAL OF DENTAL SCIENCE.

PYORRHŒA ALVEOLARIS.

By Dr. Harlan. Chicago.

Speaking of the various views concerning the causes of the loosening of the teeth, he says :—

First it may be stated that the loosening of teeth brought about by deposits of salivary calculus around their necks, seldom, if ever, is accompanied by exuding pus, which does not cease flowing immediately after the removal of the deposits. Second, in all cases of the so-called pyorrhœa alveolaris we have then to deal with conditions not existent as a result of salivary deposits. Third, alveolar pyorrhœa strictly defined is simply the flow of pus from between the gums or alveoli and the roots of teeth. Concomitant with this flow of pus we may have deposits on the roots, as little granules, sheets or rings around the teeth, caries and necrosis of the alveolar process and more or less thickening, and tumefaction of the gum tissue, with a detachment of the periodontal membrane more or less complete, even to or around the apices of the roots. Many cases present pockets leading from the gingival margin irregular in outline, which, when accidently closed by particles of food or mucus or from any cause, may quickly set up an acute inflammation, so painful as to cause the loss of the tooth by extraction or hopeless loosening. The gums recede from the necks of teeth after the loss of the alveolar process, and from impending operations, as well as from the use of escharotics, and other powerful medicaments. In many cases, however, no reunion is observable. The lower incisors are freer from true alveolar pyorrhœa than all other teeth in the mouth.

After regretting the number of names already given to this affection Dr Harlan feels constrained to suggest yet one more : viz. *Symptomatic Alveolar Arthritis.*

The justification of this choice is very simple. The recent researches made in France, particularly those by Mons. Malassez, have clearly established the fact that that which we have described as *periosteum* around the roots of the teeth ought to be considered, not as a membrane, distinct and capable of being dissected off, like the osseous periosteum, but rather as a true ligament.

This manner of looking at it, already indicated by Kolliker in Germany, and by Ranvier in France, in his course of lectures at the College of France, is generally adopted in America.

It has been already pointed out that the causes of this disease should be looked for, not in the local conditions of the mouth or gums, but in certain conditions of the general health. The disease ordinarily attacks a simple tooth; but several teeth may become involved, then the affected teeth are not necessarily contiguous, but may be at a distance from each other. Toirac and M. Oudet believe they have observed that the inferior incisors were more particularly the seat.

The teeth most frequently affected are in order of sequence firstly, the molars, then the inferior incisors, the bicuspids, the superior incisors, and lastly the canines. We have never observed this disease affecting simultaneously the whole of the teeth. At one time, it is situated on one or two inferior or superior incisors, at another the incisors are spared, and one or more molars are affected, ordinarily two or three on different sides of the mouth. Sometimes the disease attacks only a single side of a root of these latter, or it may be only a single side of a root, a circumstance which preserves to the root a certain degree of solidity for a considerable time. The teeth affected with symptomatic alveolar arthritis do not generally present any preceding or accompanying alteration. Caries, for instance, has no connection with this disease, and if this complication is present it is simply an accidental occurrence. The local conditions which accompany the development of symptomatic alveolar arthritis appear to be just the opposite to those which accompany the production of caries; the buccal saliva is in fact rather alkaline than acid, an accumulation of tartar more or less abundant is observed in the places where it is usually met with. One might be tempted on the first glance to attribute to this deposit a part more or less active in the etiology of this disease, but it is not so. The deposit of tartar is a secondary matter, and in all cases, its formation being generally uniform and continuous in the same region, it cannot be cited in the production of an isolated and local affection.

Gouty and rheumatic subjects, and those who are anœmic after exhausting illness, often present this kind of arthritis, the subjects of albuminuria, and diabetes also produce it. As regards the first we are dealing here, as is well understood, not with symptomatic albuminuria, but with what is properly called Bright's disease.

We are, in fact, confronted with a septic and contagious disease, of which the essential symptoms are an abundant alveolar suppuration, loosening and displacement of the teeth, recession of the gums—in a word, all the conditions suitable to make of this lesion a spot favourable for the action of septic agents.

These agents undoubtedly exist in this disease. The microscopic preparations of pus proceeding from alveolar diseases have betrayed the existence of a large number of organisms of very diverse forms, but none specific to the disease.

MM. Malassez and Galippe have already put beyond doubt the parasitic nature of this disease, and it is also confirmed by the frequent propagation of the disease from one alveolus to another in the same mouth, as well as by contagion from one individual to another, as observed by different authors. All that we now wish to insist upon is the value of antiseptics in the treatment of this disease. With this view he recommends such applications as alcohol, carbolicacid, perchloride of mercury, &c.

No. 1. R	Hydr. perchlor.	50 c.g.
	Aq. Destil.	1,000 grms.
No. 2. R	Acid carbolic crystal	——
	Ether	aa 5 grms.
	Alcohol	10 ,,
No. 3. R	Acid borac.	10 ,,
	Aq. Destil.	500 ,,
	Alcohol	50 ,,

Thus the treatment of symptomatic alveolar arthritis can be summed up :

1st. To render antiseptic the alveolus, the seat of the arthritis.

2nd. To modify the condition of the affected tissues by the application of astringents and caustics.

3rd. To treat the general conditions or diatheses which govern the local manifestations.

1st. The affection characterized by alveolar suppuration, by the loosening and falling of the teeth, ought to be considered as a true symptomatic alveolar arthritis, septic and contagious.

2nd. This affection is most often met with under the influence of certain general conditions and diatheses, and as secondary to eruptive fevers, &c., of which it may form either a complication or sequela.

3rd. The therapeutics of symptomatic alveolar arthritis ought to consist essentially in the employment of antiseptics, of local alternatives, astringents, or caustics, without prejudice to the treatment of the general conditions which are the determining causes. Dr. Harlan believes that the researches of Dr. Black render wholly untenable the view advanced by Dr. Magitôt, which depends upon the assumption that the periodontal membrane is a ligament. Caries of the teeth is not nearly so destructive as loosening of the teeth, on account of the ease of arresting it. For genuine discomfort, a real case of badly loosened teeth, with pus oozing into the mouth and a foul smell proceeding therefrom, is to a refined and highly organized person, worse than any other local malady. These cases are seen almost every day in various stages, and we must do something to help the sufferers. Too little attention is paid to such cases to be of much benefit to the patient. Dentists, as a rule, are not sufficiently bold in operating, and they are weak therapeutically. The instruments for operating are generally too clumsy and they are unskilfully handled; too much is attempted at one sitting. It is far better that two or three teeth should be freed from serumal deposits, and the bone excised or scraped and the medicines brought in contact with the surfaces operated upon, rather than fail to accomplish anything by operating on a dozen teeth in the same length of time if there be necessity for it; success will not follow any operation unless conscientiously performed. The caustics and escharotics and powerful astringents are not indicated *in* the pockets, but when used they should be applied to the edges or outside on the surfaces of the gums. Perfect cleanliness of instruments, removal of all débris from the mouth and around or between the teeth, the use of washes sufficiently undiluted so as to cause a free flow of saliva into the mouth, the regular medication of the diseased surfaces, not too frequent to destroy newly forming tissue, proper diet, exercise and open bowels are all essentials in the treatment of pyorrhœa alveolaris, or so-called Riggs' disease.

THE DENTAL REVIEW.

HOW TO MAKE AND USE COPPER AMALGAM.

By Dr. Geo. H. Weagant, Cornwall, Ontario.

Nearly fill a tall narrow glass beaker, or other vessel of suitable shape, with a weak solution of sulphate of copper—1 in 2, (saturated solution). Pour in enough mercury to well cover the bottom of the glass, and stand a clean strip or plate of iron in the mercury, allowing the end to project above the glass. Strips of clean sheet-iron. Pure precipitated copper in a finely divided state will at once become deposited upon the iron, and the mercury unites with the copper and soon the whole surface of the iron is covered with a film of amalgam. This must be allowed to stand undisturbed until the change in the colour of the solution shows that all the copper is precipitated. Then, with a syphon, draw off the liquid and renew the sulphate of copper. Repeat as long as the mercury takes up the copper. If the iron is placed for a moment in a weak solution of sulphuric acid—1 in 5—immediately before immersing in the copper bath, amalgamation takes place more rapidly. All the mercury being amalgamated scrape off whatever amalgam adheres to the strip of iron into the glass; pour off the liquid (which is sulphate of iron solution) and turn the mass into a mortar. Rub and wash thoroughly, allowing a stream of water to fall upon it from a tap, cleaning out all the free metallic copper and scales of oxide of iron. As soon as it is as clean as it can be got, place it in a chamois skin and squeeze out the surplus mercury. Then the grinding and washing must be repeated until the mass again becomes soft, when more mercury can be removed. All the little scales and grains of oxide of iron must be removed, or else the amalgam will be dirty to work, and fillings from it discolour the tooth structure. When the amalgam is cleaned and all the mercury possible squeezed out, heat gently in an iron vessel, and when it begins to get soft rub in a mortar and again squeeze out mercury. The first time it is heated more or less steam is generated from water remaining in the amalgam, which is liable to become scattered about and lost. Keep it covered while heating at this stage. This heating, rubbing, and squeezing must be repeated again and again until the amalgam becomes very dry and it is found to set almost immediately and get very hard. It may then be made into little pellets and put away for future use.

The amalgam should be clean and free from any other metal than pure mercury and copper. To remove little grains or scales of oxide of iron:—When the amalgam is heated for the first time after washing in water, add sufficient mercury to render the whole mass quite fluid, pour into a wide mouthed bottle with a small quantity of dry, pulverised white sugar (frosting sugar) then tightly cork the bottle and shake vigorously. The oxides and other dirt will adhere to the sugar. Change the dirty sugar for clean and repeat the shaking as often as considered necessary until the mercury is quite clear and the sugar fails to become discoloured. Then fold a clean smooth sheet of writing paper like a filtering paper; place in a clean funnel (porcelain or glass); pour in the mercury and with a fine instrument punch a small hole in the bottom of the filter when the mercury will run through leaving the sugar in the paper. Now squeeze in a chamois skin and proceed with the rubbing, etc., etc., as before.

If at any time the amalgam becomes dirty by overheating or any other cause it may be cleaned by this method.

A weak solution of sulphate of copper is used instead of the saturated solution, as the precipitate is much finer and the amalgam requires less rubbing to bring it to shape.

To use it—place the quantity required in an iron spoon, and hold over a flame until mercury begins to show itself like sweat over the surface of the pellets, then crush and grind in a small mortar, (such as are supplied by the dental depots) and work together in the hand until it becomes plastic. If too soft, squeeze in a piece of chamois skin or coarse linen, using a pair of pliers if necessary. One soon learns how soft or dry to use it in order to get the best results. Do not throw away any of the scraps remaining, as they may be used over and over again an indefinite number of times. *Be careful* not to heat too much, as some of the mercury volatilizes, leaving free copper which becomes oxidized by the heat and makes the amalgam very dirty to handle. While heating, watch the little globules of mercury as they pop out and glisten upon the surface of the pellet, and the very moment this peculiar *glistening* ceases, the amalgam is heated enough.

If the amalgam is too dry, add a very little mercury, form into pellets and put away to harden. When it is again heated it will probably be found necessary to squeeze out the very same amount of mercury that was added to it.

Review.

A Practical Treatise on Mechanical Dentistry, by Joseph Richardson, M.D., D.S., late Emeritus Professor of the Principles of Prosthetic Dentistry in the Indiana Dental College. 4th Edition Revised and Enlarged. London: J. and A. Churchill, 1887.

WE congratulate Dr. Richardson upon the issue of the fourth edition of this valuable work, and feel sure that it will receive a generous reception from the profession.

In this treatise every department of Mechanical Dentistry is treated at more or less length; it is significant as indicating the practice in the United States that increasing importance is given and greater space allotted to the sections on Root crowning and Bridge work; and that in the preliminary remarks of the chapter on vulcanite we are informed "that the total abandonment" of vulcanised India-rubber "as a base for artificial dentures by intelligent and conscientious practitioners everywhere is an event of the not distant future." Much space has been given to an exhaustive account of the different metals in use in the dental laboratory, and their qualities. These chapters are of great value to the practical dentist, and in rendering us such a clear account of Metallurgy the profession is laid under a special obligation to Dr. Richardson. There is not at present known to us any text-book on Metallurgy in its relation to Dentistry, and the student, after a careful perusal of such a book as Huntington's Metallurgy is still very much in the dark as to the special requirements of the dentist. Evidently a dentist will best know the metals and qualities of metals necessary for a dental laboratory, and here is given a sufficiently lucid account on the subject by one who knows its difficulties and importance.

The only section we have found tedious and uninteresting is that on Root-crowning. One hundred and twenty pages are devoted to this subject, whereas the essential matter contained might have been easily condensed to two-thirds of the space. When every invention or method is given in the inventor's own words—copied from transactions and journals—there is necessarily a vast amount of fruitless repetition. Moreover every one is not endowed with the power to describe with such perspicuity as Dr. Bonwill and Professor W. F. Litch, whose description are always clear, concise, and interesting. Here lies the weakness of this chapter, which although it contains much excellent matter cannot in its present form come up to the general standard of this work. The following chapter --Bridge work—is only redeemed from the same fault by the excellency of the descriptions given by individual contributors. This chapter will be found exceptionally interesting and to contain a faithful account of the development of the practice of bridge-work and of the degree of perfection to which it has thus far attained.

Are the principles and practice of these two branches of prosthetic dentistry so difficult of classification as to preclude a consecutive and systematic treatment? We think not, and believe it would much enhance the value of these chapters if they were written by one person who should be an expert. There is an instructive account of the best American methods of making continuous gum work, that will be read with interest by all those who are anxious to see the working of this cleanly substitute approach perfection. There is notably omission of results arrived at on this side of the Atlantic, and we are disappointed by the somewhat casual manner in which Verrier's name is passed over. We recommend this treatise with confidence as the best written on Mechanical Dentistry —one which every dentist should possess, and one that might with advantage be given the honourable place of a standard text-book at our Dental Schools.

Dental Caries, A Critical Summary, and The Prevention of Dental Caries. By Henry Sewill, M R.C.S., and L.D.S. 2nd Edition. London : Bailliere, Tindall & Cox.

The object of these papers being to criticise the various theories regarding the etiology and pathology of dental caries, the theories are treated at considerable length, but very lucidly. The theories are divided into four classes.

1. " Those that would make out caries to be a true disease carried on by pathological action initiated within the tissues."

2. "Those admitting the disintegration to be due to external agents, but insisting that these agents are inert without the prior concurrence of morbid charges in the tissues lessening their power of resistance and predisposing them to attack."

3. "Those theories which admit that caries is entirely due to external agents, but maintain that the tissues—or at least dentine—are not passive under the process of disintegration, and assert that the process is accompanied by inflammatory phenomena or some kind of vital action."

4. "Caries is a process of disintegration commencing invariably at the surface, proceeding inwards, and due entirely to external agents; enamel and dentine are perfectly passive under this process of disintegration, and manifest neither pathological action nor vital action of any kind."

Evidence in support of the last is given at length in the first few pages, and when this theory is established to the writer's satisfaction, he proceeds to a dissertation on logic and grammar, which we consider neither relevant nor in good taste, as its evident object is to impress the reader with the writer's perspicuity—his clearness of style and his infallible logic. Finally, the other theories are fully criticised, and the case against them demonstrated conclusively.

The remaining pages of this book are devoted to a paper on Prevention of Caries.

The author in the previous section enumerates as predisposing causes of caries—*a*. Structural imperfections; *b*. Crowding and irregularity of the teeth; *c*. All diseases that are accompanied by irritation of the oral secretions. These are made the basis of the treatment advocated in the paper. Beyond this there is nothing that need be noticed in a review.

Reports of Societies.

NINETEENTH ANNIVERSARY OF THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

Reported expressly for the "British Journal of Dental Science."

ALUMINUM PLATES MADE BY CASTING.

And now we come to a very important operation in prosthetic dentistry, in a new and seemingly perfect way of making aluminum plates by casting. It is an admitted fact, by the scientific world, that aluminum is one of the lightest of metals, having a specific gravity of less than 2.5, and when used as a base for artificial teeth, its weight is ⅛ less than that of gold. A full upper denture on the base will not weigh over ¼ ounce, exceedingly light.

Aluminum can be cast into forms, suitable for crown and bridge work, as well as for full plates. It possesses and combines great stiffness with strength, lightness, durability and conductivity, together with its perfect adaptation to the mouth, and comfort to the wearer.

Aluminum is non-oxidizable and free from any action by the fluids of the oral cavity. The red sulphide of mercury used to colour red rubber, used as a base for artificial teeth will poison and influence many mouths.

Dr. C. C. Carroll of Meadville Penn, cast several of these aluminum plates, during the two days of the clinic. He used a peculiar formed furnace of his own construction, using gas, or gasoline, as his means of heat. He also employed what he calls a Pneumatic Plumbago crucible, and peculiarly formed flasks, in which he invested his teeth and moulds. The soldering of aluminum has always been a somewhat difficult task to perform. But Dr. Carroll has been able to prepare an aluminum solder, that takes hold readily and makes a firm union and joint.

S. B. Palmer, M.D.S., of Syracuse, N.Y., as good an authority as can be found in this country, speaks of his experience in wearing gold, silver, rubber, and aluminum, and gives his unqualified endorsement of aluminum, not only in his own mouth, but in the experience of his patients.*

NON-SEPARABLE DIRECT DISK-CARRIER.

Dr. J. A. Kimball of New York, presented for consideration, a useful and unique disk carrier. The name given to it is sufficiently descriptive. "Kimball's Non-Separable Direct Motion Disk-Carrier." Dr. Kimball also manufactured four different sized disks from sand paper, with four degrees of fineness.

SYPHON TONGUE HOLDER.

We find next, a useful article in a Syphon Tongue Holder, and Sub-Lingual Depressor, an invention of Dr. Genese of

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* Any reader of this journal who may want any further account of this interesting process, can communicate with the publishers of this journal.

Baltimore, Md. No matter how much the saliva may flow from the parotids and sub-maxillary glands, the exceedingly useful device effectually disposes of the secretions, by being conveyed out of the mouth by means of a silver syphon to which is attached a rubber drain tube. Dr. Genese also presented a porcelain tooth into which there had been baked a thin piece of platina, which served as a backing and was so formed as to allow a metal pin to be run up through the platina.

FRACTURE OF A TOOTH—SUBSEQUENT CROWNING.

Dr. E. C. Kirk, of Philadelphia presented at the Clinic an interesting case of a gentleman, who had his left superior central fractured by a blow some years ago. This gentleman stated to the reporter of this Journal, that, although the fracture was so extensive as to cause the labial portions of the crown to be very loose, he had retained the crown for twelve years, and the interesting part was, that the pulp and nerve had remained alive all these years, though the tooth was very loose. After that time he had the crown removed the pulp devitalized, and an artificial crown inserted. This after a while proved unsatisfactory, and the root was removed.

IMPLANTATION.

Dr. Kirk commenced the operation of implantation for this specific locality. The first operation was the injection of a fifty per cent. solution of cocaine between the anterior plate of the alveolus and soft tissues. While waiting for the anæsthetic effect of the cocaine, he prepared the root of the tooth to be implanted, and filling the larger part of it with gutta-percha—except the apex—where he impacted gold. A noticeable part of the operation was the doctor's great care observed in providing against the approach of any microbes, by immersion of the tooth, after preparing the root, in a warm bath of the 1-1000 solution of the bichloride of mercury.

There were two injections of the cocaine to obtund the parts. The first incision into the alveolus was made with a small spear shaped drill, as deep as the length of the root of the tooth to be implanted. The patient said to the reporter that there was very little pain, and not as much as he had suffered in having one of his teeth excavated preparatory to having a stopping inserted.

The doctor's next movement was to enlarge this canal by using two more drills of different sizes. His drills were of a twisted variety, and cut very coarse, for the purpose of better clearing themselves. Their distal end was smaller than the lower portion of the drill, that is, tapering. The length of the cutting portion of the drill was about an inch and a quarter, constructed much like a fissure drill, that is to say, so that the sides would cut laterally if pressed in that direction. Dr. Kirk called attention to the importance of removing all the chips of bone, and his method was to wind a small round excavator with cotton, dipped in the bi-chloride of mercury, so as to make and keep the artificial alveolus aseptic. Some gentlemen expressed the opinion that the débris could be removed better by an injection of warm water, and then flushing out the excavation with the aseptic fluid.

After everything was ready, the doctor took the tooth from its warm bath of antiseptic fluid, forcing it into its new position, and completed its retention by ligatures. It was a successful operation up to the time the reporter left, and will doubtless so prove in its finale, as the operation was performed by an expert.

Implantation and bridge work received very critical and marked attention from over three hundred and fifty gentlemen present from various parts of the country.

A CASE OF GOLD BRIDGE WORK.

Dr. C. L. Robinson of New York comes to the front again by exhibiting another case of gold bridge work, which, this time was on the left side, extending from superior left canine to second molar. The pier supports were a gold crown over the second molar, which contained a *live pulp*, and extended to a partial collar placed upon the cuspid latter tooth also having a living pulp. This bridge work, had been in practical service in this patient's mouth for over three years.

TRANSPLANTATION OF A TOOTH.

Much interest was excited by Dr. Ottolengui, showing a patient of eleven years old, in whose mouth he had *transplanted* the first right inferior molar. The case was three months old. Immediately after extracting the original six year molar, which was badly broken down, and ulcerated, the doctor had prepared a molar corresponding to the broken tooth extracted. It was necessary to cut off the roots in the transplanted tooth to a small degree. Roots were filled and tooth treated aseptically similarly to Dr. Kirk's methods. Previous ulceration had destroyed a large part of the outer gum tissue from its superior border down to a discharging fistula. All this had kindly healed, and new alveolar scar tissue had grown up, so as to invest the buccal sides of the roots of the implanted tooth. All inflammation had disappeared, and the gingival borders of the gum grasping the new tooth with beautiful adaptation.

It will be noted by the reader, that this was a case of transplantation, and not implantation. A distinction with a difference, to wit, that the cavity in the alveolus was already prepared.

CERVICAL CAVITIES.

There are, in many cases, certain cervical cavities on the labial and buccal surfaces of the teeth, that are frequently found to extend up or below the margin of the gum, and are difficult to keep dry long enough to insert a good gold filling, especially if it be of cohesive gold.

Dr. H. H. Johnson showed a peculiar light steel spring clamp and gum retractor, that had a universal application. A very useful appliance for such difficult operations.

RAPID SEPARATION.

It seems to be gaining ground in this country, amongst some of the best dental operators, to separate teeth, for the purpose of filling approximating surfaces by what is termed "rapid separation."

Drs. Perry and Parr have each invented "rapid separators" for the purpose above described, that are effective and valuable; both are for sale by the S. S. White Dental Manufacturing Company of New York. This rapid separation of the teeth does not produce any inflammation, unless performed with excessive violence. The philosophy of the movement is to *spring* the yealding alveolar walls.

FLUX FOR GOLD AND SILVER PLATES.

Dr. H. A. Parr of New York presented to the dental profession, for their consideration, a reliable and uniform flux for gold and silver plates, also for gold crowns and bridge work. It is free from impurities, and *compels* the solder to flow evenly and *thoroughly*.

SELF ACTING DISC-HOLDER.

A self acting disc-holder and disc was shown by Dr. C. W. F. Holbrook. The disc which is made in various degrees of fineness, is made of sand paper, having an oblong slot cut through its centre, into which there is bent a narrow metallic film to give strength to the disc, and through which a spring head is thrust from the holder, which is made to fit any hand piece.

We have to describe another similar device in a "Non-separable Direct Motion Disc Carrier, and Sand Paper Discs," exhibited by Dr. J. M. Kimball. Both of these disc carriers have their appropriate places for certain uses, and both seem necessary in every well-regulated operating room.

PAPERS.

January 17th, 2.30 p.m.

G. V. Black, M.D., D.D.S. read a paper entitled, "An examination of the disturbing forces in physics with relation to the germ theory."

Dr. Black's paper was an able production and a mere synopsis would give no idea of its value. Dr. Black claimed that there were sixty-nine elementary substances that composed all the material things of this world. That nature was constantly busy in her cycle of change, with composition and decomposition, of some one or more of these sixty-nine elements. Light, heat, and electricity were ever busy in composition and decomposition. Dr. Black is considered an authority in the germ theory, as a cause of the different diseases, but considers that disintegrating changes are due to a great variety of causes, amongst which, in certain cases, the microbes are prominent factors.

Discussion upon the paper was opened by W. Xavier Sudduth, M.D., D.D.S. of Philadelphia, Pa. "There has been found but a very few bacteria that can be considered the direct cause of some specific disease. There have been found certain micro-organisms in living tissues, nevertheless only a few diseases can be traced to bacteria. There have been, however, a greater number of bacteria that have been called pathogenic. All dental caries are not the result of micro-organisms; some caries are due to an erosion from an acid condition at the cervical borders. Failure of operations at the cervical border of cavities is due to the acid condition of the saliva, and certain forms of micro-organisms.

Before any bacteria can go to work and produce dental caries, there must be some kind of lesion, crack, pocket, or sulci in the attacked tooth.

We do not know the action of lactic acid on the teeth. It cannot be fully satisfied with the lime salts. Dilution of the acids, as is well known, hinders their action on the teeth. What is needed is preventitive dentistry and medicine. There have been found some sixty different organisms in the mouth. No one as yet has fully worked out the general pathological condition of the mouth.

The use of all the different antiseptics is not necessary to destroy these different organisms. In case of freshly removed pulps, it is only necessary, to dry and *heat up the canals* and seal them, by *filling up tight.* If sensitive afterwards, treat from the outside, by cutting through the process, and perform operations from that direction.

C. T. Stockwell, D.D.S., of Springfield, Mass. was the next speaker. He thought the ever present bacteria, and a weakened nervous condition had much to do in the destruction of the human teeth. The germ theory was thought nothing of five years ago. It was then met with ridicule and unbelief.

W. C, Barrett, M.D., of Buffalo, was unable to be present, being detained by sickness.

PAPERS.

Tuesday evening, January 17th, 8 p.m.

Frank Abbot, M.D., Dean of the New York College of Dental Surgery, submitted a very lengthy paper on "A contribution to the knowledge of Tumours of the Jaws." Carl Heitzmann, M.D., and Dr. Abbot have been engaged for a long time in the histological examinations of oral tumours, and gave pathological sections, shown on a distant screen by the aid of calcium light.

Truman W. Brophy, M.D., D.D.S., also Professor Sudduth, who were solicited to open the discussion, were obliged to decline on account of not having had an opportunity to previously examine the paper under consideration.

The versatile Mr. H. Atkinson, M.D., who is always fully primed to talk on any subject, and at any time, interestingly discussed the paper at considerable length.

CLINICS.

Wednesday Forenoon, January 18th, 1888.

Dr. R. Adair, of Gainsville, Georgia, separated the approximating surfaces between the left lateral and central, and filled a cavity with soft gold foil, in the left approximating surface of said central. Dr. Adair said he required only from five to six minutes to safely and effectively open up space enough to perform such an operation.

For our next clinical observation we have some interesting experiments, made by Dr. Geo. Haskins, of Newark, New Jersey. It consisted of depositing pure silver on a plaster model of the mouth. The electrical energy used for such deposits, was obtained from a dynamo machine, as the case requires a strong current. The teeth are secured upon such plates, by means of vulcanized rubber. If desired after vulcanizing, the silver plates are thickly covered by a deposit of pure gold, by the electrical process.

G. L. Curtis, D.D.S., of Syracuse, New York, implanted the first superior bicuspid in the jaw of Geo. E. Lamb, M.D., of Port Henry, New York. About the same methods were used as heretofore described. Dr. Lamb had an adjoining tooth, excavated, and declared that said excavation preparatory to filling caused him more pain, than did the boring into the alveolus, for the implantation of the first bicuspid. Dr. Curtis' operation was very successful. He exercised the greatest caution to rendered aseptic all his instruments, the tooth, and new socket, which seems to be a leading point, with all of these operations.

Frank B. Darby, D.D.S., of Elmira, New York, has a good idea, (which he exhibited to an admiring crowd,) in the form of finely twisted and stiffened paper points, tapering to a point, designed to be run into tooth canals for the purpose of absorbing moisture. They are constructed out of bibulous paper. A good thing. Also "Hard Felt Polishers for the Dental Engine," with shellac centres.

H. C. Register, M.D., D.D.S. of Philadelphia, demonstrated the use of compressed air in its various applications, in Dental Practice; operated upon putrescent teeth, with or without fistula. Also filling of teeth canals. Bleaching of teeth and filling the same at one sitting. Also demonstrated the combination of gold and alloy,—an amalgam while soft —at the same sitting. Also exhibited the Register Dental

Engine, and mechanical Mallet in combination with an office lathe.

Dr. E. S. Gaylord, of New Haven, demonstrated the filling of teeth by the use of his "Ivory pointed Pluggers." Also a new "Dam-Holder." Dr. Gaylord's method is much like the the Herbst process, that is, rotation, with this difference, that his points are worked directly with the hand, unaided by the engine.

A favourite form and kind of gold foil, with some of the best operators in America, is manufactered by Mr. Kearing. He makes a *very soft* and beautiful foil, which ean be readily made *very cohesive* by gentle heat, Mr. Kearing also manufactures "Standard Gold Cylinders," and tin foil from number 2, up to 8 grains per leaf.

Dr. Flagg, of Philadelphia, Pa, demonstrated his use of the plastics, such as Amalgam and Oxy-Chloride of Zinc. He had used it as a lining for soft frail teeth, and filled the remainder of cavities with tin,soft gold, and amalgam.

Dr. A. W. Gibson, of Boston, Mass, demonstrated the workings of his "Pneumatic Plugger," operated by an air condenser attached to his engine, and conveyed to a suspended receiver, from which, by means of two small rubber pipes he conveys the compressed air to his plugger, and also to a blow pipe, near his chair.

We have now to explain the "All porcelain Bridge Work," of E. Parmly Brown, D.D.S., of Flushing, Long Island. There is no metal in sight. He cuts a longtitudinal slot in the palatal, or lingual surfaces of his artificial teeth, inserts a strong irido-platinum bar, fills up with what is called a good body, and bakes the whole together. He also fuses the approximating surfaces of his artificial teeth in such a manner as not to destroy their contour, and thus adds very materially to the strength of the bridge. He secures the ends of his bridge to good strong teeth or roots, by either gold crowns on molars, or by locking this base in substantial gold fillings. We have seen a case of seven teeth, that has been in use nearly three years, and heard the patient remark that he "would not take one thousand dollars for it." A good test. Have seen two full upper cases, shown by the doctor which had the appearance of coming directly out of the gum, as though they had grown there. It is claimed for them, that they are the strongest form of bridge work extant. One thing is quite patent, that they are by far the cleanest,—

being easily kept clean,—and are more life-like in appearance than any specimen of bridge work shown in this country; and there can be no doubt of their great strength by the peculiar combination of fusing the approximating surfaces together, which does not mar their contour of beauty in the least. Dr Brown's method is pronounced a great success.

Those dental practitioners who are observant, have noticed that there is a peculiar form or contour to all the natural teeth. The molars and bicuspids have a peculiar rotundity of form that has been very difficult to reproduce in gold form. This has been entirely overcome by Dr. George Evans, New York, by constructing sectional moulds or dies, in which he swages up the most beautifully contoured gold crowns, *exact in shape to the natural teeth.*

Dr. J. A. Kimball, of New York, demonstrated the capping of nearly exposed nerves, by wiping out a previously dried cavity with the liquid preparation of oxy-cement fillings and then dusting in the dry powder, which will make a thin film of firm oxy-chloride or phosphate of zinc, as the case may be. Then the balance of the cavity can be filled in any other manner the operator may choose.

Mr. J. Flower of Pittsburg, Penn. demonstrated the use of his diamond drills for excavating cavities in artificial teeth for filling the same with gold. The peculiarity of his drills are that the diamond is brazed into the steel holder, thereby securing the diamond much more firmly. He exhibited one that has been in use for over four years.

R. B. Adair, D.D.S. gave a clinic of his method of treating Rigg's Disease. After removing all deposits of salivary calculus or foreign bodies from around the tooth-root or in any pocket below the gums, he carries a pledget of fibrous cotton saturated with per-oxide of hydrogen down between the root and gum, as low as possible, and *most thoroughly washes* out this locality with the per-oxide of hydrogen. Then, after this, he introduces a reduced solution of iodine. After the latter has thoroughly dried, as he terms it, he next proceeds to "seal up," as he says, the "gum borders and pockets" with a *very thick* solution of tannin and glycerine. Solution is made as thick as honey.

The doctor claimed that this latter solution when dried, formed a film of the tannate of albumen and effectively sealed up around the tooth, and kept out foreign bodies till the parts could heal.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, Held Feb. 13th, 1888.
W. Hern, Esq., *President*, in the Chair.

The minutes of the previous Meeting were read and confirmed.

Messrs. A. V. Knowles and H. S. Welham signed the Obligation Book, and were formally admitted to membership by the President.

Messrs. J. West Summers, J. P. Oliver, and F. Ambrosoni were balloted for and duly elected members of the Society.

On Casual Communications being called, Mr. J. F. Colyer, for Mr. Kendrick, presented a lower molar tooth having an uniquely dilacerated root.

Mr. G. W. Moseley shewed a specimen of exostosed root, which he had extracted from a patient with a syphilitic history. Judging from other local manifestations of the disease present at the same time, he suggested that the exostosis might be yet another example of morbid action, due to the specific taint. This view, however, was dissented from by the President and other members.

Mr. G. G. Spray presented to the Library a book on Dental Surgery, written by Koeker, and published in the year 1826.

The President then called on Mr. Pritchard for his paper on "Inflammation."

Mr. Dolamore threw doubt on embolism of the nutrient artery being one of the causes of periostitis, and denied that the red blood cells passed through the walls of the vessels by diapedesis.

Mr. G. W. Moseley asserted that stasis did not occur in the vessels before diapedesis, and agreed with the last speaker in his remarks on the etiology of periostitis.

Mr. J. F. Colyer criticised Mr. Pritchard's method of diagnosing periostitis, and expressed regret that the subject of the causes of inflammation had not been taken up.

Mr. I. J. Boyton rose to express his dissent to the last speaker's criticism, and spoke of the value of percussion as a means of diagnosis in periostitis.

Mr. H. Lloyd Williams denied Mr. Moseley's assertion that stasis did not occur before diapedesis, and showed how it was caused by the reflux of the blood stream. He pointed out that the leucocytes found in the tissues did not all originate from the white blood corpuscles passing through the walls of the vessels, but that some were formed from the connective tissue corpuscles of the surrounding tissue. He expressed regret that Mr. Pritchard had not elaborated more fully the subject of organization.

The President then called on Mr. Pritchard, who replied to the various speakers.

The President then read his Inaugural Address as follows :—

GENTLEMEN,

Allow me in the first place to thank you very cordially for the high honour and dignity you have conferred upon me, by electing me as your President for the ensuing year. This position of responsibility is not one which I should of myself have sought, for apprehensive as I am of my inability, in a Presidential capacity to do adequate justice to your Society, I would gladly have made way for someone more fitted than myself to discharge the functions of the office, could I have done so without showing a lamentable lack of appreciation of your kindness, and a species of ingratitude for your suffrages, and your expression of confidence in my sincere interest in the welfare of the Society. In accepting this honour, therefore, at your hands, I have allowed the consideration due to your wishes, to outweigh all personal feelings and inclinations in the matter, and can merely say I will do my utmost to fulfil the duties of my position and to promote the prosperity of the Society during my year of office. I am persuaded that the same kind feelings towards me which have influenced the members of the Society in my election, will not be wanting for the condonation of any Presidential shortcomings, and I am convinced that I can rely on the Secretaries and other officers to more than atone for my deficiencies.

In casting about for a subject on which to say a few words to you this evening, I thought it would not be out of place to examine what are the *aims* and *objects* of our Society, and to see how we can best give effect to them. These aims appear to me to be threefold, namely :—Educational, Social, and Scientific.

Considering our Society then, first in its educational aspect, we may observe that it affords us the advantages of a Debating Union with those of the Lecture Theatre. It enables its members to train and accustom themselves to a calm and accurate expression of their thoughts before an audience in that trying perpendicular position which is so embarrasing to the unpractised speaker. Now, although I hold, that an orator, like a poet, is not a manufactured article, I equally believe that a considerable proficiency in the art of public speaking can be attained by constant practice. Of this, an opportunity is afforded to all members of our Society, and I trust that during my year of presidency, they will not be slow to take advantage of it. I need not point out to you how advantageous both to himself and to others is the position of a member, of any learned Society who can by word of mouth, give exact expression to his thoughts on any subject; and, as we all hope some day to be members of the Odontological Society, this is an accomplishment which we should one and all make it our object to attain.

But, it is obvious, that this Society is educational in another respect, for the discussions and debates cannot but prove invaluable as a means of exchange and mart of information. In the discussion of a subject, not only is our judgment corrected by learning the thoughts and opinions of others, but also fresh ideas and new explanations of difficulties are suggested.

Sir James Paget has sagely remarked on this point, that in the interchange of knowledge, he that receives, gains, and he that gives, retains, and none suffer loss."

But our Society has also an important social aspect, for we meet together here on a common platform, the first year's man with the second, the past student with the present, distinctions of session and of year, which operate at other times and in other places, are laid aside, and a fraternal spirit is the prevailing one, acquaintances are formed and friendships are cemented.

As an old member of this Society I can recall many pleasant memories of social *reunions* at its meetings. For the promotion and encouragement of this "*entente cordiale*," I think the plan of having a conversazione now and then is a good one; however, we must consult our Treasurer before saying much on this subject, for sound financial principles are as necessary for societies as for individuals. Perhaps though, if one were asked to name the most important function of our Society, he would have no hesitation in proclaiming it to be a scientific one.

One has merely to turn over a few pages of its Transactions to perceive that its claim to a scientific status does not rest on a mere shadowy title or pretension, but on a real basis of fact.

In its proceedings generally, the Society has attained to a high scientific standard, and, as great a breadth of mind has been exhibited in the selection of subjects for papers, as depth of grasp in the treatment of the same. Good, however, as the past record of our Society is, I would not have you to rest and be satisfied. We must never forget that all human science is necessarily progressive, and requires of its students unwearied and devoted service. The truly scientific cannot be content with the position of mere camp-followers in the march of discovery, but must ever be in the forefront. There is but little useful genius in this world that has been unassisted by persevering hard work, and Nature does not unlock her secret treasuries at the request of half-hearted suppliants. I would not have you incur that danger to which, in many respects, a narrow and circumscribed specialty, such as ours, exposes us, viz. :—of drifting into a channel of fancied omniscience, or of imagining that we have reached to such a height in the mountain of knowledge that we can complacently fold our arms and rest.

Sir James Paget, as renowned for pregnant aphorisms as eminent for brilliant deeds, has pertinently remarked "that the fault of specialism lies not in its narrowness, but in the shallowness and belief in self-sufficiency, with which it is apt to be associated," and adds "that if the field of speciality be narrow, it can be dug deeply." He has further remarked, and I cannot refrain from giving you his words. that "every fact in science wherever gathered, has not only a present value which we may be able to estimate, but a living and germinal power of which none can guess the issue." In proof of this latter maxim one has merely to refer to the extraordinary value for good, of the discovery of what was at first considered an apparently trivial fact, namely, the anæsthetic effects of the inhalation of Nitrous Oxide. Now, although we cannot, perhaps, *all* hope to add facts to science, we can, at least, train ourselves to habits of accuracy, of acute observation, and of careful record of those conditions which come under our notice.

The carefully collated records of many observers gathered, as they would be, from various sources, and viewing the same condition from different standpoints, may hereafter prove of the greatest value, as means to force open some of the doors, which, even in our specialty, still remain closed to us ; and I can quite conceive that the strongholds which have hitherto proved too stubborn and resistant for individual attack might yield to a combined and determined assault, by that method which is being brought to bear on difficult problems in General Medicine and Surgery, viz. :—Collective Investigation. This method, you will remember, was recommended to our consideration by one of our former Presidents, Mr. Storer Bennett. The value of such a method of research, however, depends entirely on the accuracy of observation, and the fidelity of the record of its individual members, without which it is fallacious, misleading and worthless.

I see no reason why this Society should not constitute itself a small research body, and by means of well-collected facts, and fair and direct induction from them, aid in deciding, at least, some of those knotty questions which are still awaiting solution. Instruments of precision are within our reach ; the microscope and the resources of Chemistry are at our command. We have access to abundance of material for our investigations ; in fact, I know of no more extensive field for scientific observation than is year by year afforded by the Dental Hospital of London, with its roll of, I believe, now nearly 50,000 cases. All are engaged in the same pursuit, so that opportunities are open to everyone alike. Time alone seems to hedge us in and limit our aspirations to more perfect knowledge in this direction ; and I fancy I hear some of you saying that all the time of your curriculum must needs be occupied in the preparation for the ordeal at the College of Surgeons. Such an excuse probably has some validity in the case of those of you who are engaged in fulfilling the general with the special curriculum ; but, I am not sure that it has so much weight in the case of those who are preparing for the latter alone. Others, perhaps, will say, why trouble to go outside the necessary work of my curriculum now? Why not wait until I become qualified or get into practice, when I shall have more leisure time? But I would remind you of Mr. Tomes' masterly address to the

Odontological Society last year, in which he pointed out to us that when we get into practice, such are the exacting and growing demands of the modern practice of dental surgery on our physical powers, that very little time or energy can be counted on then for serious study. It behoves us, therefore, to examine our position and see whether, after all, the present is not the most opportune time for the pursuit of those objects to which I refer.

I need scarcely tell you that in every search for knowledge, we strengthen our intellectual power, so that, whether or not success rewards our efforts to unravel any of the mysteries of our Science, we are necessarily gainers by the attempt.

Among the list of affections, on which further light is required, may be mentioned pyorrhœa alveolaris, a disease, it is true, which is not quite such an enemy as caries, but it is one, the observation of which brings something akin to a feeling of shame to our minds when we reflect on our present ignorance as to its true pathology. We frequently behold teeth, otherwise perfect and unimpaired, lost to their possessors through a condition which we are unable fully to explain or adequately to combat. I entertain a suspicion, which almost amounts to a conviction, that micro-organisms play a very important part in the causation of this disease. I mention this merely as a suggestion for enquiry in this direction.

Another affection which equally needs further investigation in order to bring it within the fold of preventible or curable ailments is Erosion.

Still another interesting study for us, is that question of the influence of Heredity on the production of caries and of the irregularities of the teeth, a question propounded by our scientific leader Mr. Charles Tomes, who recommended as an aid to its elucidation that a careful register should be procured of the type of tooth in certain families, *e.g.*, as to its colour, &c. A study of this sort, however, will be best prosecuted, perhaps, in private practice, where we have better opportunities for observation of families and generations than in hospital practice. I venture to allude to a few of these more abstruse questions as a suggestion to those senior members of our Society who may already have given them some consideration. But, I cannot help thinking, that, in the practice of a hospital like ours with such unrivalled resources for study in its large attendance of patients, much valuable information and knowledge within easy reach is now lost for the want of proper record and tabulation.

From the river of dental diseases, irregularities, and abnormalities which flows through our hospital year by year, much more that is useful and practical might be removed and stored up.

In the casting of this net, all alike could take part, for the opportunities are not to the advanced student only, nor are they confined to particular sessions or years. The results, too, of carrying out such a suggestion would neither be narrow nor selfish, for it seems to me necessarily to eventuate in at least a fourfold advantage. To the student, it could not but tend to educate and strengthen his power of observation, while it would add to his fund of knowledge, moreover, the material for more numerous and varied casual communications would stimulate the pulse of the Society, as well as tend to disseminate information. I would suggest that a book be kept for the record of special cases, that one or more members should be chosen to take notes of them, including in the record the description of the disease, the treatment, and the result. These notes, or abstracts of them, might be reported to the Society, and, where practicable, the cases themselves exhibited. Under this head might be included cysts, antral affections, growths, and those conditions which are not of common occurrence. The carrying out of this suggestion would bring under the notice of all our members those interesting and instructive cases which are now seen only by the few whose fortune it is to be in the extracting room, or elsewhere when they present themselves. Again, with regard to the treatment of irregularities of the teeth, of which the number we see here is only equalled by their variety, very much that would be of practical service is allowed to drift away. A collection of models illustrating the treatment from beginning to end of cases treated mechanically, as well as those in which nature, subsequent to extraction of certain teeth, has worked alone, would not only greatly enrich our museum, but prove of inestimable value to members of this Society, when forming an opinion as to the best method of treatment of these frequently recurring, and not seldom puzzling cases. I would therefore suggest that models should be taken before, during, and after treatment. Any teeth removed could be replaced in their respective positions on the first models, and the age and sex of the patient, the nature of the force employed, and the time taken in the treatment registered on subsequent ones.

It would also be instructive to be able to compare by means of a series of models the relative and respective results obtained by alternatives of treatment such as frequently are presented to our choice, *e.g.*:—the results of

Extraction *v.* Expansion.

Removal *v.* Retention of different teeth.

Premature removal *v.* Delayed retention of temporary teeth. And many others which will suggest themselves to you in this connexion.

In the same manner, I would recommend that models be taken of those mouths in which supernumerary teeth occur, that the extracted teeth be replaced in their respective positions in the model, and that these models be presented to the Society's Museum.

A collection of this sort would not only impress on our minds the usual shapes assumed by these teeth, but would also teach us the positions in which such curiosities commonly occur.

Lastly, I would advocate, especially to our younger members, the more frequent use of the cutting forceps, and the performance of "*post-mortem*" examinations in the extracting rooms, for, I imagine that you would achieve three objects, at least, by this practice :—

(*a*). You accustom your eye to the relations which subsist between the pulp cavities, and the exteriors of the several teeth, and gain such a precise and accurate knowledge of the position of the pulps, that could not fail to be of the utmost value to you when engaged in subsequent excavation and stopping operations.

(*b*) You become familiar with the pathological conditions which correspond to certain symptoms and physical signs, and, I need scarcely remind you how essential to correct diagnosis and proper treatment such a knowledge of pathology is.

(*c*) Many Museum treasures will be saved to our Society which would otherwise be unnoticed and cast away.

In conclusion, gentlemen, I fear I have wearied you with thoughts and suggestions for work, while I have been silent in regard to recreation. Do not imagine, however, that this silence has been due to want of appreciation of the necessities of rest, or an under-estimation of the value of recreation, but rather because we have an excellent Athletic Club, which looks after our wants in this direction; and, although I am aware that I have in return for your kind attention this evening, presented you with no new facts, I yet venture to hope that the few crude suggestions I have been able to offer may not be devoid of practical result in assisting to make the year that lies before us an interesting and profitable one to the Society.

The President accorded the thanks of the Society to Mr. Pritchard for his paper, and to Messrs. Kendrick, Moseley, and Spray, for their contributions to the Museum and Library.

He then announced that the next meeting would be held on Monday, March the 12th, when Mr. F. Todd would read a paper on "Extraction and its Complications."

The meeting was then adjourned.

Dental News.

ODONTOLOGICAL SOCIETY.

Monday, March 5, 1888. Casual Communications :—By Mr. David Hepburn, Mr. Boyd Wallis.

Paper :—By Mr. Frederick Eve, F.R.C.S., &c. "Communication on Actino-Mycosis and some Micro-parasitic affections of the Jaws and Mouth," with exhibition of microscopic specimens.

Inaugural Address, by the President, Daniel Corbett, Esq., M.R.C.S., &c.

C. J. BOYD WALLIS, *Hon. Sec.*
23, Brook Street, W.

THE VICTORIA DENTAL HOSPITAL.

THE annual meeting of the Victoria Dental Hospital was held Feb. 10th in the Mayor's Parlour, at the Town Hall; Mr. S. L. Helm presiding.

The committee stated in their fourth annual report, which was read by the honorary secretary (Mr. H. L. Knoop) that, although the total number of patients treated during the past year fell slightly below the number treated during 1886, still the large total of 10,477 showed how thoroughly the working and poorer classes appreciated the benefits and advantages derivable from the opportunities which the hospital afforded them of receiving the highest professional advice and assistance. The total number of cases treated in the institution since its establishment, not quite four years ago, now reached the large total of nearly 34,000. The prosperity of the educational work of the hospital as a School of Dentistry in connection with the Owens' College was increasing. Eleven students attended the practice of the hospital during 1887, and two of them most successfully passed the examination of the Royal College of Surgeons of England, and obtained the dental diploma. Regret was expressed that the amount of the annual subscriptions was still far below what the merits and importance of the institution entitled it to expect.

The hon. treasurer (Mr. F. W. Travers) read the balance-sheet. The subscriptions for the year amounted to £102, the donations to £7 16s.; students' fees £53. The balance at the bankers had been reduced from £65 to 4s. 8d.

On the motion of Mr. Huet, seconded by Mr. J. Grantham, the retiring members of the committee of management—Mr. T. Black, Dr. D. B. Hewitt, Mr. A. M'Dougall, jun., Mr. J. Norris, and Mr. R. Spencer—were re-elected. Mr. F. W. Travers, the hon. treasurer; Mr. Knoop, the hon. secretary; and Mr. Herbert Kidson, the hon. auditor, were also re-elected.

A vote of thanks was presented to the Committee of Management and the officers of the hospital on the motion of Canon Woodhouse.

Mr. Rattray moved a vote of thanks to the Mayor for granting the use of the room. Mr. Planck, dean of the hospital, in seconding the motion, appealed to the public to help the hospital more liberally than they had hitherto done, an additional income of £100 per annum being required.—The motion was supported by Mr. F. Scott and carried, and the meeting concluded with a vote of thanks to the chairman.

ERRATA.

Page 160, 8th line from the bottom, read "either," instead of "ether."
" 5th " " read "flame," " "plan."
Page 161, 12th line from the top, read "Brin's" " "a new."

[" Answers to Correspondents " are unavoidably crowded out of the present issue.]

British Journal of Dental Science.

No. 484. LONDON, MARCH 15, 1888. VOL. XXXI

THE MANAGEMENT OF PULPLESS TEETH, FROM THE STANDPOINT OF DAILY PRACTICE.*

By A. W. HARLAN, M.D., D.D.S., Chicago, Illinois.

MR. PRESIDENT AND GENTLEMEN,

It is with no small degree of trepidation that I venture to present to you a few observations on the management of pulpless teeth, in face of the fact of recent contributions to our Society's proceedings and the current periodical literature of the time. However, I hope that the subject itself has enough of interest in it to receive and merit your most thoughtful consideration. In the effort to conserve teeth in the mouth for mastication and articulate speech, the retention of roots for the support of pivot teeth and crowns, and the growing tendency to resort to bridges of the fixed and removable kind, dental surgeons everywhere are devoting much of their thought, ingenuity, and energy in the direction of retaining within the mouth many pulpless teeth, we have had presented to us various operative procedures designated by their authors as mechanical methods; others have been urged for adoption as the immediate dressing and filling method, and still others comprising what is known as the lime-dressing or therapeutic expectant method. From the variety of systems proposed in the management of pulpless teeth the student or inexperienced surgeon would hardly be able to choose a safe path in which to tread unless they were directed by a strong hand. Pulpless teeth are found in the mouths of the old, the middle-aged, and the young; even the teeth of the first dentition do not escape the ravages of caries, and slow death of the pulp, or its destruction by other means, is not infrequent. Pulpless deciduous teeth and roots may very properly be retained for mastication up to or about the time of the expected eruption of their successors. At this point, however, I will omit their further consideration.

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* Read before the Odontological Society of Great Britain, Feb. 8th. 1888.

For convenience of treating the subject of the management of pulpless teeth, we will classify them under several headings as follows:—

First. Teeth deprived of pulps by means of corrosive medicaments, or immediate operative procedures—cautery, broaches, wooden points, anæsthesia, or accident.

Second. Death of the pulp as a result of capping or filling, from rapid thermal changes.

Third. Death from partial luxation, as from a blow or fall, or, from torsion in correcting irregularities, or from imperfect or partial extractions and replacement of tooth.

Fourth. Death from gradual exposure by caries, or some form of abrasion or erosion.

Fifth. Death from exposure of the pulp through salivary deposits, exposing the apices of roots by displacement of tissues, or from the development of pockets resulting from the so-called Riggs' disease and their extension to or around the apices of roots.

Sixth. Death from irritation by pulp-nodules or strangulation, and from unknown causes.

From this classification, imperfect as it is, you will readily agree with me that no single method of operation, surgical or therapeutic treatment, will suffice to meet all indications in the treatment of irritations, inflammation, or abscess. From a somewhat extended experience in the conservation of pulpless teeth of all classes, covering a period of nearly twenty years, in one city, with few birds of passage as clients, my records now show, not hundreds, but thousands of teeth treated and the roots filled, with few recurrences of abscesses or open fistulæ.

My method of procedure is as follows for Class One:—In the management of this class of pulpless teeth there are three things that I invariably insist upon and carry out faithfully. First, complete disinfection; nothing is allowed to enter the pulp chamber or canals that is not placed there by my own hands, by means of clean and sterilized instruments; water and saliva are rigidly excluded. Second, no powerful coagulators of albumen are introduced into the pulp chamber or canals prior to the removal of the pulp. Third, the root-filling material must be innocuous, tabooing the incorporation of antiseptics or disinfectants as a component of the filling material. If I have destroyed the pulp by any of the methods above spoken of, immediate extirpation under a local or other anæsthetic, by the cautery, wooden point (a barbarous method,) or if it is in a recently fractured tooth, I assist the cessation of hæmorrhage, then swab or syringe the pulp chamber and canals with equal parts of peroxide of hydrogen and a one-thousandth solution of bichloride of mercury until they are free from blood and serum. The root is then desiccated with absolute alcohol and heated air, and filled at once. If I have destroyed the pulp with arsenic or other corrosive, at the end of two days or thereabouts the corrosive is removed under antiseptic precautions, keeping the tooth and cavity dry while a dressing of tannin and glycerine is applied to the devitalized pulp, first puncturing it to allow the congested blood to escape. This dressing is covered with gutta-percha, through which two or three perforations are made with a pointed instrument to allow any confined air to escape. This is allowed to remain eight days, when the dressing is removed. The rubber-dam is adjusted over the tooth, and the pulp is extirpated with suitable sterilized broaches. It will be found healthy and much reduced in bulk by this treatment. The pulp chamber and canal or canals are to be washed and swabbed with the peroxide and bichloride solution above mentioned, the root desiccated and filled at once. The roots are not reamed or drilled, but access is obtained by freely opening the pulp chamber.

Class Two. In the management of this class of pulpless teeth we generally find little trouble in diagnosis from the observance of three conditions, one of which is always present —*i.e.*, encystment of the apex ; a dormant or cold abscess ; or a fistulous tract leading from the end of the root externally or occasional lifting the periodontal membrane from the root, and pus found escaping at gingival margin.

Encystment.—This may be suspected if the tooth has been free from tenderness in mastication, or when it is unaffected by thermal change, and the canals are dry when opened into for the first time. Absence of odour is also to be noted. Treatment : disinfectant dressing and immediate root-filling.

(*To be Continued*).

MANAGEMENT OF DIFFICULT CAVITIES.*

By H. Brockway, M.D.S.

The prevalence of decay of the teeth among civilized people is almost universal, and the cause of untold suffering and disease.

Up to the present time no way has been found of arresting the ravages of decay, and restoring to comfort and usefulness, teeth attacked by caries, except the operation known as stopping or filling. This consists in removing the carious portion of the organ attached, and replacing in the cavity thus made, by the lost substance, some material not affected by the agents which produced the lesions, in such a manner as to hermetically seal the cavity.

This operation is one of the most difficult that a dentist is ever called upon to perform, requiring, in all cases, to ensure success, judgment in selecting the material to be used, and *manipulating skill of a high order!*

To persons unfamiliar with the subject, this statement seems extravagant. Their general impression doubtless is, that it is simply a matter of removing of the decayed substance, and packing something else in its place ; the success of the operation being in direct ratio to the cost of the material used for the purpose. Hence, the request so often made by our patients that "gold only" be used in filling the teeth, since they wish to have them filled in the "best manner." How widely incorrect are such ideas, I need hardly stop to point out at this time, and yet, we must admit, that they have some warrant in the teachings which prevailed in the text-books of dental practice of but a few years ago.

Dr. Harris in his "Principles of Dental Surgery," after enumerating and condemning with more or less severity, all the other materials in use for filling teeth at that time, tin, lead, silver, amalgam, etc., says "In the opinion of the author, *gold* is the only material which should ever be employed for filling teeth. A tooth in almost every case, may be so filled with it, that its permanent preservation shall be effectually secured."

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* Read before the Brooklyn Dental Society.

Fortunate are we of this generation indeed, that this teaching is not for us the highest truth; else, how greatly curtailed would we feel our usefulness to be; how limited the number of our successful operations, and, how would the course of daily practice bristle with difficulties insurmountable!

True, there has been given to us, since the days of Harris, some new filling materials, and some possibly improved forms of old ones, but our present advantages has come more largely, than from these, from the broader and more scientific views of the operation of filling teeth, of the causes which render it necessary, and the conditions that conduce to its success. In short to the principals of eclecticism, in the choice of materials based, to a large extent, on a knowledge of compatibility between the substance of the teeth, and the material employed to restore its wasted tissue.

Now, what do we mean when we speak of *successfully filling teeth*? and what are the difficulties in the way of its accomplishment?

I shall not at this time inquire into the causes that produce dental caries, although this is germain to the subject, and, in my judgment, is one of the most important questions that can engage our attention. Suffice it to know that caries is alarmingly prevalent, and that our time is largely occupied in the endeavour to check its ravages and restore to usefulness the organs it has attacked.

To this end, as I have already said, we have as yet discovered no better way than to replace the lost substance, with some extraneous material—since the teeth possess no recuperative power, like the softer tissues of the body—and experience has taught us that in making this restoration, a necessary factor of success, especially when gold is employed for the purpose, is, that a mechanical adaptation of the materials to the walls of the cavity *shall be perfect*! More than this, we must so change the condition of the affected organ, and its relation to its surroundings, as to *prevent* a recurrence of the disease.

Nor must we lose sight of the necessity of adopting whatever material we use, to the varying conditions of the teeth affected, and, to the æsthetic requirements of the case under treatment. *This is successfully filling teeth.*

Take as the simplest example of a case, those cavities which are formed in the *sulci* of the bicuspids and molars in teeth of the densest structure, we find that the management of cavities increase in difficulty, as they vary in situation, or in quality of tooth structure, until a point is reached where our best efforts secure a doubtful success, that this point is sooner reached by some, than by others, will not be denied, since all are not equally endowed with skill, judgment and experience ; and it is hoped that I might indicate a way of overcoming some difficulties that I speak of to-night.

Were we confined to the old methods and ideas to which allusion has been made, and deprived of the aids to our practice now at our command, comparatively small would be the chance of our bettering the practice of thirty or forty years ago. But, fortunately, the progressive spirit of the age has placed in our hands, aids, numerous and invaluable, that our fathers knew not of.

How crippled indeed should we be without the burring engine, the corundum stone, the rubber dam, the assistant at the chair, and the various concomitant appliances of modern practice ? This is tempting ground, and I feel loathe to leave it, but time will not allow me to dwell on it longer. So, dropping the theoretical, let us take up the practical side of the subject, and apply modern methods to specific cases as they are met with in daily practice.

Let us take, for instance, the case described by Harris, in the work referred to, of a cavity in the lingual and posterior approximal angle of a first or second superior left bicuspid, especially after the loss of the tooth behind it, and there is a backward inclination of the tooth. This, he well describes as a cavity "exceedingly difficult of management, especially when the mouth of the patient is so small, that it, the cavity, can only be seen with difficulty." The attempt to make saving operations *with gold*, in cavities of this character, has brought no end of disappointment and chagrin to the operator, and little benefit to the patient, where, had a better adaptation of means to the end been shown, and the cavity been filled with a good amalgam, or, even with Hill's stopping —gutta percha—the operation would have been comparitively easy of accomplishment, and reasonably certain of success.

This practice can often be applied to advantage to the distal surfaces of even the cuspids, especially where they are somewhat retracted, and dominated by the adjoining bicuspids ; the hidden position of the cavity, while offering a great obstacle to the introduction of a material, less harmonious in appearance, but easy of manipulation.

There is a class of cavities usually considered difficult to manage, and, indeed, justly so, where gold is only employed, that are particularly easy to care for by the use of amalgam. I refer to those cases, where large, and well made gold fillings in the proximal surfaces of bicuspids and molars show signs of failure at the cervical margin after a few years' service. The attempt to repair these breaks with gold, will be almost sure to result in speedy failure, no matter by whom undertaken ; the removal of the entire plug—stopping—and the filling of the cavity *de novo*, requires much time, and by no means precludes a recurrence of the trouble, while with *amalgam* the repair can be readily made ; experience seems to show, that fillings so treated, possibly, through some galvanic effect from the contact of dissimilar metals, are less liable to give way, than as originally made.

This method of treating such fillings, is by our friend, Professor Flagg, styled, *guarding !* and the word seems fitly chosen. I do not hesitate to employ it upon defective fillings, even in the anterior teeth : especially, in persons past middle age, where the diminished size of the teeth, and the darkened complexion consequent on age, renders the contrast between the added portion, and old filling, scarcely noticeable.

It has not escaped the observation of every practitioner of experience, that the superior lateral incisors, from their relatively small size, are more liable than any of the other teeth, to the loss of the nerve from the presence of metallic fillings. Where they stand in a normal position, cavities in them can be filled with gold, without difficulty, and, with every prospect of success. But, where they stand inside of the line, and are much hidden by the neighbouring teeth, as sometimes is the case, it is unwise to attempt their salvation with so intractable a material as is gold. It has been my custom for some years to fill cavities in teeth, so situated, with Hill's stopping, or some of the plastic materials, with results that seem to fully justify the practice.

To comment on another case from Harris, let us take those cavities which form on the buccal surfaces of the molars, particularly the second and third of the lower jaw. Where the mouth is small, or the cheek quite inelastic, such cavities, especially if partly below the gum, as is often the case, are exceedingly difficult to fill properly. I have seen many gold fillings placed in such cavities, and, almost an equal number of failures. Nor does amalgam always seem to serve here. Of course the oxides of zinc are interdicted from solvent power of the gum secretions upon them. Here is where Hill's stopping is very useful, and in my hands has proved the most permanent and satisfactory of any material; and withal the least difficult to manage.

Cavities found in the distal surface of the posterior teeth in the seemingly inaccessible positions, can often be readily reached by a judicious cutting away of the distal grinding corner of the tooth, an operation easily performed with a rather thick corundum, while kept liberally wet by a stream of cool water from a syringe, in the hand of an assistant. It is surprising how little cutting, will often be needed to bring an obscure cavity into view. Nevertheless, considerable cutting should be boldly made if necessary to ensure access. Most of us would be liable to err from timidity in such cases.

Where another tooth adjoins the one affected, still further access can be obtained through separating them, by proper wedging.

Not the least trying cavities to manage, are those proximal ones that are found in the temporary teeth of childhood. The broken down condition so often found, renders it exceedingly difficult to make fillings of any kind in individual teeth, but where adjoining teeth are affected, I have found no better way to treat them, than to bridge over with Hill's Stopping from one cavity to the other. Simple as it is, this method has proved most effective and satisfactory.

Time, however, will not permit me to continue, although the subject is by no means exhausted. The point I have wished to make plain is, that, while the saving of teeth by filling has ever been, and is likely to be, beset with difficulties that will tax our best skill and earnestness, yet, by a proper and intelligent use of the means at our command, we may lighten our labours, and increase our usefulness to those who come under our care.

THE PATHOLOGY OF ALVEOLAR ABSCESS.

By E. Lloyd Williams, M.R.C.S., L.R.C.P., L.D.S.
Assistant Dental Surgeon, London Dental Hospital.

(*Concluded from page* 212).

I am afraid my own experiments are so slight as scarcely to justify the expression of an opinion, and yet I am unable to account for the transparent belt of dentine in fangs which have been involved in periosteal inflammation without assuming a process of a low inflammatory nature. In the first place, it has yet to be proved that the tissue is incapable of pathological changes *per se*; the fact that it is non-vascular is of itself not sufficient, and on *a priori* grounds we are justified in assuming that *any* tissue, if it be alive, is capable of exhibiting inflammatory action. From a large number of sections which I have made, there appears to be a distinct increase of medullary tissue in the shape of enlarged tubes and their contents, which is more marked as it recedes from the area of irritation in the direction of the pulp canal. And this is further explained by its liability to deep staining, a phenomenon which is a characteristic feature of inflammatory material. On the other hand, the transparent belt already referred to in immediate continuity with the cementum, certainly gives evidence of calcification as a sequence of inflammatory action; and it may be noted that the increased transparency of the tissue may be differentiated from the dentine nearer the pulp canal even after the tooth has been softened in acid for the purpose of section-cutting. In fact, the process seems to be somewhat analogous to *sclerosis* of bone, varying in degree rather than in type. It has been generally assumed in the words of Mr. Charles Tomes that "the vitality of the dentine is sacrificed when the pulp is destroyed;" and and we have been in the habit of speaking of a pulpless tooth as a *dead tooth*. I cannot subscribe to this formula, because I believe that death of the dentine does not necessarily follow death of the pulp. I think I may assert without fear of contradiction that in the whole range of human pathology not one instance could be found of new *living* material being deposited on dead tissue. Yet this is true if death of the dentine follows death of the pulp, as the deposition of cementum to repair absorbed patches of dentine in pulpless teeth may be easily demonstrated. One of the specimens under the microscope clearly shows this, and is taken from one of the fangs of a lower molar which had been treated for alveolar abscess unsuccessfully for a long period. This last indication of vital action in dentine is one which appears to me to be convincing; and I would particularly invite those members of the Society who are sceptical of anything in the shape of a pathological condition of dentine—and they must be in a large majority—to discuss this particular point, and try and account for such a strange phenomenon.

ON THE TREATMENT OF INVETERATE NEURALGIA OF THE FIFTH NERVE.

By J. MONTAIGN DIDSBURY, Paris.

THOUGH a member of the Odontological Society of Great Britain since 1864, I have never had, hitherto, the opportunity to bring a communication before the Society, my time having been so much taken up with the affairs of the Odontological Society of France, of which I am proud to say I am one of the founders.

If I now make an exception, it is with the hope of attracting your attention to a subject which I have treated almost contemporaneously with Mr. Victor Horseley—viz., "Inveterate Neuralgia of the fifth Nerve."

At a meeting of the Odontological Society of France I brought to the notice of the Society a work entitled "Dental Megrim-Trifacial Neuralgia, and its treatment by Neurotomy of the Auriculo-Temporal Nerve; dissecting and cauterizing the Helix." By Mons. P. Grout, Rouen, May, 1887.

The treatment recommended by Dr. Grout is very old, and doubtless many of you are acquainted with it; but for one reason or another it had been abandoned and fallen into the hands of the blacksmith and others. It consists, as indicated

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8vo. Mèterie, Librarian, No. II., Rue Jeanne d'arc, Rouen.

[Rewritten and Translated, at the request of the Author, by C. J. Boyd Wallis, Foreign Secretary to Odontological Society.]

by the title of the work, in dividing and cauterizing with the actual cautery the Auriculo-Temporal Nerve, and the author scientifically describes the curative effect of the operation upon neuralgia. He has made careful notes of 169 operations, of which 156 are stated to have been successful.

The operation is a very simple one. The instrument he has used, Dr. Grout has been kind enough to send to me by his son, Dr. Franklin Grout. It was given to him thirty-four years ago by an old dentist of Rouen, named Leclere-Baroche. The instrument consists of a blade resembling a screwdriver, about six inches in length (18 to 20 centimetres), including the handle, and a sheath. The sheath is surrounded by wood to prevent injury by heat to the hands of the operator, also for the protection of the patient. A groove to fit the helix exists at the end of the sheath. The operation may be rapidly performed, requiring only three or four seconds. It is a simple operation, and does not require the experience of a surgeon like Mr. Victor Horsley, who proposes the "Avulsion of the Fifth near or close to the skull," an operation which no dentist would undertake.

I would recommend to the notice of those gentlemen who are French scholars this interesting work of Dr. Grout; the information contained therein would require more space than could be allowed in a communication of this kind.

After due regard has been paid to the connection of the teeth, and the dentist has satisfied himself that a wisdom tooth is not the cause of the mischief, I would recommend him to have recourse to Neurotomy of the Auriculo-Temporal Nerve, for, as previously stated, the operation does not require the assistance of an experienced surgeon.

In the transactions of the Odontological Society of France for January 8th, 1885, will be found my communication on this subject, viz.: "On Refractory Facial Neuralgia of the Fifth Pair: The Superior and Inferior maxillary branches of the right side; The Neurotomy Cure"—("Cas de Neuralgie faciale rebelle de la cinquième paire: Branches du Maxillaire Superieur et Inférieur, Côté droit: Neurotomie-Guèrison").

The following case, that of a lady who had been a sufferer for many years, came under my care. After other and ineffectual treatment, neurotomy was decided upon. I removed all the remaining teeth and roots, numbering twenty-two. Dr. Péan, a Paris Hospital Surgeon, then performed neurotomy, the patient having been previously placed under the influence of chloroform; the operation lasting one hour and ten minutes. Three months later I supplied the patient with a denture. The patient was cured, but disfigured, and subsequently paralysis of the lip followed, by which the upper lip was drawn to one side.

I have read with great interest the discussion which followed the very interesting paper by Mr. Horsley at the meeting of your Society. Mr. Horsley asks for information respecting the character of the pain, the primary seat of the disturbance, &c. I will give him and you, gentlemen, a few paragraphs referring to the conclusions arrived at by Dr. Grout, which will answer these questions as well as if they had been written for the purpose.

At page 52 Dr. Grout says:—

7. The teeth are generally the origin of these affections.
8. The stomach, uterus, and other internal organs are also the origin of megrim, though more rarely.
9. The internal and external remedies which have been recommended for centuries past only accidentally remove or alleviate the pain.
10. Neurotomy of the Auriculo-Temporal Nerve will alone cure, sometimes in a few minutes, always in two or three weeks.
11. Anatomical facts exist which explain this result.
12. It is the shock to the grey axis of the medulla produced by cauterization that effects the cure.

This I will translate in the best English at my command as follows:—"The curative effect of igneous neurotomy of the auriculo-temporal nerve is due to the shock it produces on the grey axis of the medulla." Dr. Grout tells us that it is also a remedy for sciatic neuralgia, and if I did not make earlier mention of this it was due to my not wishing, as a dentist, to digress from my special subject. But Mons. Verneuil, a Paris Hospital surgeon, wrote me that he had seen it used successfully for sciatic pain.

My conclusion is that in cases of acute neuralgia of the head, where the teeth have been well examined and attended to, we are justified in practising neurotomy of the auriculo-temporal nerve by means of the actual cautery. It should, according to Dr. Grout, be performed in both ears.

In conclusion, gentlemen, I will state one case which has been thus far successful, though the operation was performed too recently to enable me to speak of it with absolute certainty. A man came to me on the 8th of October, 1887, suffering acute pain, and he had been deprived of sleep for several days. Upon examination of the mouth I found the first, second, and third molars were completely decayed, as was also the lower wisdom ; he was unable to indicate from which of the teeth the pain arose, therefore, as I did not think it well to remove the four teeth, I decided to practise Neurotomy of the auriculo-temporal nerve near the ear with Dr. Grout's neurotome. The operation was performed only on the affected side on the Saturday, and I requested the patient to report himself to me on the Monday following, which he did, and at the same time expressed his gratitude for the service rendered, stating that he had slept well on the night after the operation, and on the Sunday all pain had subsided. I have not seen him since, but he promised to call at the beginning of next week. Therefore I have felt justified in noting this case as a success.

Loss of blood occurs only in 1 case in 25. In this case there was no loss of blood, and the scar was but a trifle, and upon which I recommended an application of vaseline on cotton wool.

My only object in this communication is to be useful, first of all to humanity, and secondly to our Society.

THE TREATMENT OF PAIN.*

By. J. Maughan, M.D.

Dr. Maughan commenced by stating the "Difficulties of detecting the presence of pain," compared the treatment of the present with the past, stating, that the pathology of old-fashioned treatment, viz., that organs took upon themselves an overaction, was erroneous and misleading. The dental aspect of the question, indicated that toothache was the evidence of some real irritation, and it was the duty of the dental surgeon to find out that irritation.

That ophthalmic neuralgia, was the most common symptom of disorder of the teeth, still, it was necessasy to diagnose such referred neuralgia, from one due to Malaria and

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* Abstract of a Paper read on Feb. 3rd., at the National Dental Hospital Students' Society.

Hysteria; and how important it was to find out if there is any history of Syphilis, Gout, or Rheumatism, because, if so, and if neuralgia were situated at a spot where the nerve emerged from bone, medical treatment alone might be successful.

He explained how pain is sometimes attributed by patients to a healthy tooth, and mentioned that Quinine and Arsenic were useful as blood tonics, and suggested that Phosphorus and fatty food might be very valuable in the treatment of the neuralgia of wasting nerve, also stating that Croton Chloral, Chloroform and Morphia, were especially useful in Tic Doloureux.

Then Dr. Manyhan pointed out the analogy between the spasms of delirium, according as a nerve, a muscle or the mind was involved, and referred to the inflammatory cases of the pulp being very much benefited by Antimonial treatment. He recommended a liniment for the pain of periostitis, made by mixing equal parts of Fleming's Tincture of Aconite, and a strong liniment of Iodine, (double the strength of the Pharmacopœia).

The lecturer wound up by stating what opportunities the dental surgeon had for saving patients from a life of misery, where the sight was gone, hearing gone, and taste, in fact all desire gone; and in concluding, pointed out the relationship which ought to exist between the medical practitioner and dental surgeon in the treatment of pain, and urged the latter, to forget the dogma of the past, to do their work thoughtfully and honestly, and to base their treatment upon a sound pathology.

SOFT TEETH IN CHILDREN.*

HOW FAR ARE WE JUSTIFIED IN ATTEMPTING TO SAVE THEM?

BY JOHN STIRLING, L.D.S., England.

IN considering this matter it does not seem to me to be so much a question of deftness of hand and skill in operating as it does one of good sound judgment, though I confess I have sometimes been very undecided as to what to do, or what *not* to do, yet I am satisfied that a great many children's teeth have been stopped which should not have been stopped, and that the operation was not only useless, but worse than useless.

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* A paper read before the Odonto Chirurgical Society of Scotland.

To begin with the temporary teeth (of which I shall have only a few words to say), we usually find it difficult to stop *teeth* for such young patients as are under seven years of age. The flow of saliva, and restlessness of the patient, together with his inability to endure the pain caused in removing the decay, make it in most cases impossible to insert proper stoppings. Many cases there are, where it may be advisable and important to save the temporary teeth, but our subject is *soft* teeth. Then, if we insert into soft teeth, stoppings which are not proper stoppings, they can only partially arrest the decay, and only for a very short time. Now if that is so, are we doing right in filling these teeth at all when we are asked to do so? I think we do better when we advise their being left to decay, and then extract, when necessary, for toothache. Three weeks ago I removed all the upper teeth, and the four lower molars from a child of three years old. The front teeth were only stumps, and the molars were extensively decayed. I do not believe that any harm will result from the early loss of the molars, and of the temporary teeth, these are most prone to give toothache.

Now, with regard to the permanent teeth, I see a great many cases of rapid decay in the teeth of children, where, from the age of the patient, and the poor structure of the teeth, we can only but imperfectly and inefficiently stop that decay, and I have long since observed that there are a certain number of cases entirely beyond the power of our art to deal with successfully.

We sometimes have brought to us children under twelve years of age, whose teeth are carious and soft, so sensitive and painful to the touch of an instrument that it is a great strain on the nerves of both patient and operator to attempt the insertion of good stoppings—teeth, upon which we could spend a great deal of time in putting them right, which would probably require attention again in the early future, and which, after all our stopping and restopping, would result in only partial success. For instance, a child of nine or ten years old is brought to us with the six-year-old molars decayed, not as yet very extensively, but all apparently soft teeth, also, interstitial decay in the front teeth. We stop them. Some time after some of the molars require another stopping, and we see the bicuspids now fully erupted, some of them likely to require attention by-and-by; in another year some of our first stoppings are giving way, were stop these teeth, and that goes on at shorter or longer intervals for five or six years, till the patient has reached the age of eighteen years, when probably the teeth will be getting harder and the saliva less acrid, and then we have good hope of being able to save permanently what we have left. But what have we left? We have left, in many cases, a number of unsightly and not very useful teeth, some of them perhaps causing occasional discomfort to the patient, and, to say nothing of time and expense, how much has the patient suffered? How much has the operator been worried with sensitive teeth before arriving at this result? If we have gained a good set of teeth, we are repaid for all our labour, but if we have only an imperfect set—if some of the teeth have been lost, in spite of our endeavours to save them, and those that are left are, many of them, not teeth, but halves of teeth, the other halves being made up of stopping—then I ask, have we been doing a good thing for the patient in trying to save them at all? We may expect that soon after reaching manhood, our patient will be requiring artificial teeth.

I think you will agree with me that it is not unusual for us to have to extract all the upper teeth from a young lady not over eighteen years of age. A few months ago I extracted all the teeth (twenty-eight) from a boy only fourteen years old. The patient being a boy, made it the more unusual. They were all stumps, with the exception of the lower front teeth, which had parts of the crowns remaining. I feel sure that any attempt to save that boy's teeth, however good the patient and proficient the operator, must have resulted in failure. It is in the belief that too often such teeth *are* stopped that leads me to ask if, in attempting to save such teeth, we are doing any good for the reputation of our profession, or would we be likely to increase the confidence which the public reposes in the potency and usefulness of our art? Would we not rather be creating a poor opinion in the minds of our patients as to the real value of stopping teeth?

When children with soft teeth are brought to us to have their teeth attended to, I think we ought to pause for a moment and consider before we begin, how the case is likely to go on in future; and we should not undertake any case lightly or unthinkingly, and give it our serious consideration only after part of the work has been done. You may advocate conservative dentistry, but if that means stopping any tooth you are asked to stop, or that you find decayed, simply because it is not too much decayed to be stopped, then I think that is carrying conservative dentistry to extremes.

To arrive, then, at a proper understanding of a case, we should begin by carefully examining all the teeth as to the extent of the decay, their degree of softness, their colour, or opacity, their degree of sensitiveness to the touch of an instrument, and also find out the character of your patient, as much depends on that. Some children will sit still, and bear pain bravely, while others will not even try to do so. Consider also the health and age of the patient, and the probabilities of his being brought periodically to the dentist, with a true desire to save the teeth. If we have found a decidedly unfavourable answer to these inquiries, we should tell the parents that little or no good can come of stopping the child's teeth.

We must also, of course, guard against having a too hopeless opinion of a case. Though the general aspect of the teeth may at first sight be unfavourable to stopping them, it might not be right to decide against trying to save them. A child of twelve years old, for instance, who has several teeth decayed—molars and upper incisors—if they are not chalky or opaque, and if the history of the parents' teeth is good, the patient not a delicate child, and the decay has not reached the pulp in the front teeth, then it would be quite right to undertake to try and save them. Possibly the patient may have lately been slightly out of his usual health, the oral secretions have been altered, and when that passes away, the teeth may be saved without much difficulty. However, as no rule can be laid down, we must only consider what our experience will warrant us expect, and be guided accordingly.

In many cases we find it advisable to leave the molars alone, but desirable to save the front teeth and bicuspids. Of course the loss of the molars is to be regretted, though it were only to prevent a too close bite. Where all the back teeth are early lost, the points of the lower front teeth will in many cases eventually strike behind the upper front teeth close to the gum, and possibly cause protusion of the upper front teeth. I have seen it also cause one or two of them to be elongated, or partially dislodged from their sockets, and occasion slight suppuration at the root.

In removing decay I find it a good thing to begin with small or narrow pointed excavators, which cause less pain, because it is often inconvenient to apply an obtundent to a child's tooth. I depend very much on oxyphosphate stoppings, excepting in interstitial decay, extending up to the gum, which requires amalgam. Gold, which makes our best stoppings, is not so much the best for children's teeth, considering their vascularity; besides, we should not inflict a protracted operation on a young patient when it can be avoided. My practice is to stop with plastics till the patient is old enough to easily bear the insertion of gold.

If with temporary or other stoppings, we can save the teeth up to the age of fifteen, after that our greatest difficulties are over. But what we want to learn is, just to know at first sight what cases to undertake and what *not* to undertake. To know that is, I believe, more valuable than knowing how to stop these teeth well.

I think we shall usually find our patients satisfied with our advice, though that advice should be to leave the teeth alone. I recollect, however, two cases where a patient, after I had advised against stopping the teeth, had gone to another dentist and had them filled. When I saw them again, in one case the stoppings were gone, in the other case the teeth were gone. I cannot think it was for the sake of a fee that these teeth were stopped, much more likely it was simply an error of judgment on the part of the dentist as to the possible permanency of the work. Children should be taught at an early age the use of the tooth brush, and to use it at least twice a day. Young patients with several stoppings in their mouths should be told to brush the stoppings vigourously, otherwise we may hear of them brushing them *lightly* for fear of spoiling them. I am not aware that we can do anything in the way of constitutional treatment. It had been said, I do not know with how much truth, that any mineral substance which should give us phosphate of lime for the bones and teeth cannot be assimilated into the body. It must first be taken up by the vegetable, and from vegetable assimilated into the animal system. On the other hand, some dentists say they have seen marked beneficial effects on the teeth from the use of lime water. In this country we have little need to advise food which will give bone-forming substance, because most children take oatmeal porridge once a day, and eat plentifully of bread.

We are sometimes asked if the teeth of the present day are more liable to decay than were those of two or three generations back. We may have our own opinion of that, but we have no statistics, and nothing to show to prove it. But if it be true, we have all the more need to discuss the subject of soft teeth.

PAIN AFTER FILLING.

By Walter Whitehouse, L.D.S.E.

I cannot remember that pain after filling has received our attention, and it will be gratifying to succeed in arousing interest and discussion on such a practical subject.

One need not to possess the candour of Rousseau to confess considerable pain follows our filling operations in a proportion of cases, and obviously in those teeth that have been the recipients of the most protracted labour from the extent of decay. My experience is to have met with as many cases of trouble after filling, where I have least expected it, as where I have thought it most probable, because in the probable cases the precautionary measures taken are usually successful; and trouble has not unfrequently ensued in comparatively shallow cavities in good, hard brown dentine, or after what has been thought a most successful treatment of dead tooth.

This subject has two divisions and two classes of treatment—pain after filling with live pulp, pain after filling with dead tooth treatment; remedies applicable only by operator, remedies applicable by patient.

In so much as rhizodontrophy lacks scientific advocacy as a treatment, so it possesses practical utility when patients (not to speak of operator) are not prepared to go through the ordeal of a second filling and nerve devitalisation. It is quite a practical operation on a tooth filled with live nerve from the amount of pain suffered before the patient returns, or endured during attempt at amelioration by other remedies causing nerve disorganisation. But it is sufficiently severe to prompt one to pay every attention to use only the sharpest drill and the most suitable shape, such as 103 Ash's Catalogue, page 158, or better still, 128 Dental Company's List, page 43, and as expedition is a gain, to mark the drill with rings made by a file whilst revolving, and decide up to which ring to drill in the event of the entrance to the pulp cavity not being perceptible. The spot under the gum where the drill enters the neck of the tooth can seldom be seen. but the depth drilled can be estimated by the relation of the external edge of the gum to the rings on the drill. A little carbolic pumped in often immediately allays the pain.

As a result of decided pain after filling, the nerve is sure to die. Cases are constantly seen with a fistulous opening on the gum, and, it is safe to say, had rhizodontrophy been performed, in nine cases out of ten there would have been no such opening, less offensiveness of the dead pulp, and an absence of chronic periostitis and uneasiness; therefore, by trying palliative treatment in cases where such decided pain has ensued that the ultimate death of the pulp may be foretold, I ask, is it not better treatment to at once resort to rhizodontrophy?

To persevere with counter-irritation only in dead teeth is to waste valuable time and opportunity to cut short the trouble, for there need be no hesitation to drill a vent when it is remembered the service of such a tooth is practically not curtailed by so doing.

The capsicum plaster, I am inclined to think, is of use only in the very earliest stage of pain, when trouble threatens, rather than is present, and if given to the patient to apply with such directions are valuable.

A saturated solution of chloride of ammonium is a mild treatment. Its value consists mainly in its being a remedy our patients can themselves apply, for where the pain is but very slight, and there is reason to believe it will pass away in a short time, the patient is considerably encouraged to persevere by the prescription of a remedy directed to be rubbed on the gum every two hours.

Two parts of liniment iodine to one of Fleming's tinct. aconite is a remedy so long in our hands that each can form his own estimate of its value. Although I use it in all cases that present themselves for treatment, I should hesitate to rely only on it the second visit of patient, unless there were distinct evidence of benefit derived.

The poultice should be recommended the patient in case rhizodontrophy fails to give relief, and when the mischief is seen to have passed beyond mere pain in connection with a dead tooth, a poppy is directed to be cut into eight parts and well macerated in as hot water as can be tolerated, a portion is placed in the sulcus of the cheek and changed the moment it has lost its heat, the tension and congestion of the part is relieved, with often speedy cessation of pain, when the poultice may be discontinued; generally it must be continued until the gum can be pierced.

Lily of the Valley Perfume.—The following recipe from the *Chemist and Druggist* will be found useful.

Extract of jasmine	20 oz.
„ ylang-ylang	3 „
Cardamom seeds	1 „
Oil of orris flower	10 drops

The cardamon odour, if predominating, must be neutralised with jasmine.

Manipulating Oxyphosphate.—Editor of *Items* says, "If oxyphosphate is mixed with dexterity and speed and thoroughly packed *very quickly* it will do to mix it quite stiff, but many stiff mixings are failures, either because not evenly mixed, or because not put in the cavity with sufficient speed and skill. All burnishing of these fillings must be done before they set or the pressure makes them crumbly and worthless. Therefore, for nearly every manipulator, it will be found better to mix only moderately stiff; and if the cavity is large or difficult to get at, it should be quite soft, and, if necessary, two mixings should be resorted to. Al- burnishing of the surface should *immediately* follow the filling, and generally, no burnishing should be undertaken. Some years since, when we were experimenting with its manufacture, we spoiled many fillings with wrong manipulating that we supposed was defect in the make."

British Journal of Dental Science.

LONDON, MARCH 15th, 1888.

POST GRADUATE CLASSES FOR LONDON.

THE establishment of post graduate teaching in London, which we have so strenuously advocated for the past year or so, has at least become an established fact, and the London Dental Hospital will, in April next, open its doors to those who desire further education in the modern application of dental art. We have the programme before us and are glad to find the staff of the hospital deem it possible to extend the instruction over so wide a field. Gold and Tin fillings, Herbst's ~~method ; the use of~~ hand, and the different kinds of mallets in gold fillings ; cohesive and non-cohesive gold fillings alone, and in combination, all find a place in the course ; while palladium fillings, the application of the rubber-dam, and the treatment of Alveolar Abscess, Pyorrhœa Alveolaris, Pulps and Pulpless teeth are also to be included. Methods vary so enormously as years roll by, that many, we venture to affirm, who "come to scoff will remain to *learn*." Many, who, having studiously kept abreast of the time by *reading* their dental journals, will be surprised to find how extremely different it is to read of a method and to attempt to apply it. It is to be hoped that the course about to be initiated, will be run on as practical lines as possible, as what men in practice want, is to see and to handle, rather than to hear. The enlightenment of the public, is at present so great and daily becomes greater, that dentists will do well to maintain themselves fully up to the knowledge of their generation ; for if *they* don't know, they will find their patients do, and will not tolerate shoddy work. One hears much of advertising scamps, of puffed up dental institutions, and many are the moans of the dentists who reside in the same districts as these gaudy shrines of St. Dunstan, but they don't always appreciate that the more sure way of cutting the ground from the feet of charlatans and catchpenny dentists, is to demonstrate by one's work the superiority of the genuine over the sham. If, as we hope the staff of the Dental Hospital will see its way to holding other courses subsequent to the April one, there can be little difficulty for all dentists within the radius of London and its suburbs, to come to the lectures and demonstrations at Leicester Square, and so maintain themselves in the ranks of the progressionists. With this chance open there can be few, if any, excuses for a man to remain a "stick in the mud," and if he elects to be dubbed by that ineuphonious epithet, he must quarrel with no one when he finds his clients gradually tailing off to his neighbours, who have been content to make a little exertion to go with the tide of progress and improvement.

THE GATHERING OF THE STUDENTS OF THE LONDON SCHOOL OF DENTAL SURGERY.—On the 8th the dinner given by the Athletic Club of the above dental school took place at the Holborn Restaurant. With Sir Edwin Saunders in the chair, and quite a collection of "grave and learned seniors" the occasion could hardly be allowed to pass without the introduction of a large modecum of speechifying. The dental students of London are anxious to take a place in the athletic world, and contest with the general hospitals the laurels, or to be more precise, the mugs, biscuit boxes, silver saltsellers and shields, accessible to the accomplished runner, cricketer, footballer, tennis player. and athlete in general. To promote that end, the Club of the London Dental Hospital, being well upon its legs and able to kick, wrestle, and generally to display its prowess, its members sat themselves down to dinner, and invited athletic personages, and those interested in the promotion of sports, to join them. Among the guests were Mr. Septimus Sibley, Dr. Julius Pollock, Professor Schäfer, Professor Cullingworth, Mr. Bland Sutton, Mr. Ashley Bloxam, the Dean, and several members of the staff of the Dental Hospital. Healths were drunk, and songs were sung, noticeable among the last was one due to Mr. J. Smith Turner, which that veteran champion sang with a right good will. Whether politics should find a place at such reunions is, we think, open to question; but it seems inevitable, and so we were not surprised to hear Mr. Astley Bloxam express an opinion in favour of the appointment of qualified dentists, to look after our soldiers and sailors; and various other allusions to dental polemics. The prosperity of the London School of Dental Surgery and Dental Hospital was dwelt upon, and the munificence of the dental staff and the chairman received full mention, and elicited great demonstrations of enthusiasm. The affairs of the Club, of course, the burning matter of the evening were dealt with by Mr. J. F. Colyer, the honorary secretary, in a speech which possessed the great advantage of being concise, crisp, and very much to the point. The announcement which this gentleman made, that the Club was successful, both as regards its competitions and its finances, was fully appreciated. Mr. Colyer went on to say that although the Club was healthy and solvent, still it was most desirable, in view of possible fresh developments, such as establishing "sports," &c., that old students should join the Club, and so assist the present men in doing honour to their old school. The Athletic Club may be congratulated upon having scored a decided success by this, we believe, their first public dinner.

CHANGES IN THE STAFF OF CHARING CROSS HOSPITAL.—Upon the retirement of Mr. Barwell, F.R.C.S. from the post of Surgeon, Mr. John H. Morgan, F.R.C.S. becomes promoted to fill the vacancy thus created.

THE BALANCE SHEET OF THE BRITISH DENTAL ASSOCIATION.—The duly audited balance sheet of the B. D. A. is now before us, and we are enabled to extract the information for which we prematurely sighed at the Annual General Meeting. As we before explained, the detailed account could not be presented at that meeting, because the auditors were not in office. The heaviest items appear to be the expenses of producing the journal £584, of which sum £300 is covered by advertisements and sale of journal, and the legal expenses £239, this includes actions against Stowart, Werner, Robertson, French, Day, Maden, and Adamson. The Association starts its financial year of 1888--9 with a substantial balance on the right side of the ledger.

An Irish President of the Odontological Society of Great Britain.—At the last meeting of the Odontological Society of Great Baitain Mr. Corbett, of Dublin delivered his inaugural address. Mr. Corbett, as an Irishman and a resident in Ireland, receives from the Odontological Society a high compliment in being offered, and pays the Society a high compliment in accepting the Pesidency. This gentleman has ever proved himself a keen and ready supporter of the men who, a choice band rallying round Sir John Tomes, have made the dental profession what it is, and have further laid the foundation for its still brighter future. He came over to England and took English diplomas, not content with the "only dental degree" (save the mark!) Mr. Corbett appended the M.R.C.S., and although he is now an old man, he does not appear to have suffered in mind or body by recent attacks upon his duplicated diplomas! An admirable address was listened to with great interest and at its finish the speaker was applauded to the echo.

Mr. Frederic Eve upon actino-mycosis.—Actinomycosis a fungus parasitic disease affecting man and beast formed the subject of a lecture by Mr. Frederic Eve, F.R.C.S. delivered before the Odontological Society at the March meeting. This curious and very fatal affection is commonly connected with the jaws and commences by an ordinary toothache. This becomes intense, inflammatory matters are thrown out, and rapid suppuration occurs leading to the formation of huge abscesses, which traverse the body in all directions, and form numerous sinuses. The fungus causing all this havoc is conveyed by the blood to internal organs infecting the visera, such as the liver; and, hence, bringing about a fatal result. The fungus may by careful microscopic examination, the methods for which Mr. Eve described, be recognised in the pus of the abscesses, and so the disease be diagnosed. Dentists in dealing with suppuration about the jaws, with alveolar abscesses, etc., are recommended by the the lecturer to carefully examine the pus for the actinomycetes.

A NOVEL MEANS OF OBTUNDING SENSITIVE DENTINE.—It is said that if a patient holds his breath after having filled his lungs with air, the pain of excavating a sensitive tooth is reduced to a minimum, or not felt at all. This is probably correct; and another plan is to get your patient, if he has will enough, to partly mesmerise himself by fixing his mind and attention upon some bright object, such as a reflector. Both methods need considerable power of self control, but may be worth the trial.

A GOLD SOLDER as recommended of eighty-nine parts of the plate used alloyed with seven parts silver, and four parts copper. This is reliable, flows easily.

PHOSPHORUS NECROSIS.—Dr. Gish writing to the *Dental Cosmos*, narrates the following instructive case:—Mr. D., aged 23, presented himself for relief for severe burning pain, and a considerable swelling, which involved principally the masseter and temporal muscles of the right side of the face. The swelling was hard and tense, and the mouth could be opened to but a limited extent, with a great deal of difficulty. The mouth was dry, but there was no odour to the breath. All the teeth were in perfect order and condition. None of the answers to my questions afforded any assignable cause for the patient's present condition, but on general principles I advised a hot flax-seed poultice to be applied continually to the side of the face, until the inflammatory products should begin to soften ; then, to remove the poultice, and to protect the face with warm dry flannels. I directed

R.—Potassii iodidi . . . . grs. v.
Hydrargyri per chlorid, . . . gr. $\frac{1}{64}$

to be given every three hours during the day. This treatment, with the exception of $\frac{1}{4}$ of grain of morphiæ sulphatis given at the beginning as an anodyne, was continued for two days, with marked benefit ; no pain, no swelling, and but little soreness in the muscles under pressure. Two days more restored the right side of the face to its normal functions and proportions. But three days later I was again called to see the young man, and I found him in bed, with the same old trouble, but somewhat increased in intensity. Temperature 1000, pulse 90, skin hot and dry ; the breath had an oniony smell, and, as he expressed it, "his mouth tasted as if he had it full of onions." In answer to my questions, he said that he did not know what brought it back upon him; neither had he been eating any onions; but in some accidental way I now learned that he had been in the habit, for some time past, of chewing matches and blowing the smoke out, just for pastime. I did not look further for the cause but ordered that the match-chewing should be stopped, and prescribed single drop doses of aconite every hour during the day, directing the re-application of the flax-seed poultice, the internal treatment as before, and effected the desired result in three days' time. As the swelling subsided this time there were two points, one at the angle and the other at the middle of the body of the jaw, that were very sore and painful to the touch, thus showing the condition of the periosteum at those points. But the sensitiveness passed away with no more trouble. I think this was a case which, if it had been allowed to run its course, would surely have developed at the two above-mentioned points necrosis caused by phosphorus, without the presence of carious teeth to be charged with the lesion.

THE LOUISIANA STATE DENTAL SOCIETY.—This Society held its Annual Meeting last month and achieved a success. Like so many of the dental societies of America, it takes great pains about details, and therein sets a valuable example to many of our societies over here. The programme announcement of the meeting is one of the most tasteful productions we have yet seen, and deserves the highest commendation.

THE OPENING OF THE NEW WING OF THE LONDON DENTAL HOSPITAL.—Through the courtesy of the authorities we are able to give a brief account of the recent improvements effected at this hospital. The formal opening takes place on the 15th. The increase of room was found absolutely necessary, both on account of the more numerous attendances of patients, and the increase in the number of students. It has been obtained by purchasing a house to the west side of the hospital, and throwing it into the present building. This allows a new entrance on the west side, a fresh "gas room," while the patients are provided with a spacious and comfortable waiting room, thus obviating the uncomfortable crowding which has latterly occurred. The stopping room is greatly improved, space for several more patients being afforded, and good light chairs for operating, added. The students have not been forgotten, for they now have spacious lavatory accommodation below stairs, and the nuisance is now obviated, which hitherto has arisen, of students passing through the patients' waiting room and gas room, to get their coats and hats. The further addition of a fine theatre, in which, as was recently happily expressed, all students "can catch the speaker's eye" has greatly enhanced the convenience of this valuable institution.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

THE DIAGNOSIS OF DENTAL CARIES AND ITS SEQUELÆ.

BY A. MORSMAN, M.D., D.D.S., OMAHA, NEB.

CORRECT diagnosis is the first step to success.

Two things are essential in diagnosing: first, accuracy; second, our use of means least unpleasant to the patient.

Physical signs must not alone be depended upon, to the discomfort of the patient, for very much can be learned from symptoms. A decayed tooth is met with, and almost the first thing is an excavator, with which the cavity is entered—carefully, perhaps, but causing fear and discomfort on the patient's part.

Diagnosis is made by two methods, objective and subjective, or by physical signs and by symptoms. Symptoms are subjective conditions incident to the disease which become perceptible to the patient's consciousness—as pain, heat, chill, lassitude and the like; physical signs are the changes produced by the lesion, swelling, redness, hardness, the appearance of pus, or bleeding.

The writer gives the following directions:—Do not hurry. Put your patient at ease, if possible, and avoid touching the tooth or using instruments until you have elicited what information you can by other means.

Is there, or, has there ever been any pain? Of what the character? What induces it? What aggravates it? Does, or has the tooth ever ached? Has it ever ached at night? Is the ache or pain continuous, or does it occur at regular intervals? Is there any pain in masticating? Is the tooth tender or sore? If food gets into the cavity, does the tooth ache? Do hot or cold drinks produce pain? Has there been a history of "gum boil," or of previous dental operations? How long since the tooth gave trouble? What effect have sweets or acids?

Dental caries may exist without pain. Remembering the localities where caries is likely to occur will greatly aid us. A mouth-mirror and a fine pointed probe are essential to an examination. Beginning at the upper third molar, pass successively over each tooth in that jaw, and return in the same manner on the lower jaw. Regard all fissures with suspicion, and press the point of the probe into them their entire extent. If they are perfect, the feel of the enamel is easily recognized. Approximal surfaces should be closely scrutinized. A bit of floss silk drawn between the teeth will sometimes indicate, by catching, that the teeth should be separated and further examination made. White, opaque spots are almost pathognomonic. Pits, defects, and coloured spots should be examined carefully.

Case I.—A white, opaque spot of softened texture, sometimes coloured brownish, or even black. It may be round, oblong, serpiginous, or, if at the gingival margin, crescentic. No history of pain, except it be on the neck of the tooth, when there may be pain upon touching, either with an instrument or the finger nail, even before it is perceptible to the eye. *Possibly*, but very rarely, there has been pain upon eating sweets. The diagnosis is *superficial caries.*

Case II.—A cavity of variable size, depending upon the tooth, the situation and age of the patient, but penetrating beyond the enamel. Apt to be sensitive to sweets and cold air, and drinks. Cold causes sharp, fugitive pains, and occasionally transient aching. These symptoms are more marked in proportion as the tooth is of good organization. No pain upon suction or pressure upon the floor of the cavity. Points were the pulp is likely to be uncovered give no response to the probe, no pain upon tapping, and the sound is clear and ringing. The diagnosis is *simple caries.*

Case III.—The cavity is quite deep and filled with debris. If the decalcified dentine has remained in place overlying the pulp, possibly no pain; otherwise, the tooth is extremely sensitive to cold, a stream from the water syringe giving decided pain. There may have been slight toothache, or even a severe one, but of short duration. Pain upon suction and when food is wedged into the cavity is quite a marked symptom. The examining probe finds some spot sensitive to pressure, or possibly touches the exposed pulp; no tenderness upon tapping the tooth. The diagnosis is *complicated caries.*

Case IV.—Severe odontalgia, either by day or at night, nocturnal pain being almost pathegnomonic. Pain, throbbing, pulsating, or beating in character; it may be diffuse, extending over the entire half the face, or, more rarely, situated in the tooth, designated by the patient as "jumping toothache." There is some soreness of the tooth, and there is likely to be considerable tenderness on tapping it with an instrument, although this symptom does not *always* exist. The probe readily detects the exposed pulp, now exquisitively sensitive. Hot water injections, or hot drinks increase the pain, while cold water held in the mouth may give temporary relief. Reclining or taking any position that tends to cause a flow of blood to the head increases the paroxysm, hence the tooth is almost certain to ache at night. Bleeding of the pulp is sometimes a marked symtom, especially on removing a pledget of cotton from the cavity; it occurs only in aggravated cases. The countenance is anxious and the appearance of the patient dejected, especially so if the pain has been of long duration. The diagnosis is *pulpitis.*

Almost every severe and continued toothache, the pulp being alive, indicates that the stage of irritation is passed, and if the pain is violently throbbing, or if occurring at night, we know that congestion is reached.

Case IV. (*b*) All the symptoms of acute pulpitis in an aggravated form, of long standing. Very difficult to control by applications. If the cavity is well defined, pus may be seen upon the surface of the pulp; pulp bleeds at slightest touch. The diagnosis is *suppuration of the pulp.*

Case V.—Severe, heavy, bounding pain, extending over one-half of the face, but felt plainly in the tooth and in the temples: sometimes very severe earache. Tooth excessively tender to the lightest touch and so loose as to be moved with the fingers. It feels longer than the adjoining teeth, and over its roots the gums are congested and tender to pressure. If the cavity be opened, the pulp will be found to be dead, and the probe passes into the canal. The disease is *acute periostitis*, or, pericementitis.

The symptoms of aggravated pulpitis often simulate periostitis, but the tenderness of the tooth is not as marked, and there is not apt to be any soreness upon pressure of the gum above the root of the tooth.

Case VI.—Continued pain or remitting pain, tenderness upon pressure, and upon tapping the tooth the latter gives a dull sound instead of the clear, ringing tone of a healthy tooth. The pain, although severe, is not as unbearable as in periostitis, and there are apt to be intervals of rest. On examination, pus is apt to be found in the canal, which is also to be found open. The diagnosis is *acute abscess*.

Case VII.—No pain or tenderness. Tapping with an instrument produces slightly different sensation from health, but it is often necessary to tap an adjoining tooth to enable the patient to detect the difference. The sound produced by tapping is dull, the pulp is dead. The canal is filled with debris of bad odour ; sometimes pus is plainly present. There may or may not be a fistulous opening through the gum and process at the end of the root. A history of gum boil can sometimes be obtained, or the scar may be present. The diagnosis is *chronic abscess*.

TIN AND GOLD.

By J. G. Reid, D.D.S., Chicago, Ill.

Tin, it is said, possesses that admirable property mentioned —softness. Other valuable auxiliary properties accompany this, such as tenacity, indisposition to conduct heat, and a remarkable freedom from hardening or balling up during the manipulation of it in a cavity. The extreme softness of tin necessarily limits its use to such cavities as are not exposed to excessive mechanical attrition. Its preservative properties, the writer thinks, depended chiefly upon its plasticity ; thus enabling the operator to conform it to the margins of a cavity in a more perfect manner ; careful observation of its effects, has convinced that the oxide and chloride of the metal which is deposited, and which permeates the dentine so extensively in such cases, does exert an appreciable antiseptic influence. The penetration of tin oxide into the dentinal tubuli serves a mechanical purpose, viz., in plugging them up—hermetically sealing them, so that ingress to external decalcifying agents has but little, if any, action, should secondary decay make its appearance in that vicinity.

Referring to gold, the writer deprecates the exclusive use of either cohesive, or non-cohesive gold for filling.

In dealing with teeth so defective in structure as to offer but the slightest resistance to disease ; which, in fact, are often found so soft as to present no line of demarcation between normal and abnormal substance, leading the inexperienced operator to continue excavating long after all decay had been removed. Tin and gold answers better than any other filling.

The chief qualities which recommend the combination of such dissimilar metals as a filling material are: Its plastic property which makes it more easily manipulated than gold, being more readily adapted and it does not harden under the instrument. The ease and rapidity with which it can be inserted into a cavity is a most favourable consideration. "It lies readily against the walls of any cavity, and does not curl up like gold." The density of the mass is more manifest after a little time than when first inserted (process of crystallisation).

Tin unites with gold far below the melting point of the latter, owing to the great *chemical* affinity which tin has for gold when brought together under favourable circumstances. A gold rod superficially tinned and held in the gas flame of a Bunsen burner melts at once like a rod of pure tin. This is still more striking when we come to compare the heat required to fuse each metal separately. Gold fuses at a temperature of 2016 deg. Fah., while tin fuses at the low temperature of 442 deg. Fah.

In the use of tin and gold thermal influences are reduced to a minimum. Cervical margins in bicuspids and molars, large crown cavities in molars may be filled with gold and finished with cohesive gold. The surface discolouration due to tin and gold can be increased or decreased in proportion as more or less gold is used in the mass; it does not discolour the teeth, unless moisture is present in the cavity at the time of commencing the filling.

A filling of gold and tin is easier to finish, especially at the cervical margin than any other metallic filling known; requiring only a thin, narrow flat-bladed instrument, with a well defined cutting edge, which will enable you to shave the surface as readily and easily as a pine stick can be shaved with a sharp knife, and the filling will not be disintegrated; following the cutting process it is well to use one or two strips of 0 or 00 sand paper, simply for polishing. The operator who is versed in the use of non-cohesive gold, will be able to manage this combination, observing the precaution, however, not to over-mallet a gold and tin filling, because the tin will be powdered; rather depend on good firm hand pressure. If you start a filling with gold and tin, and expect to complete the operation with gold, then the mallet force required to condense will be all that the subfilling demands.

Reports of Societies.

NINETEENTH ANNIVERSARY OF THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

Reported expressly for the "British Journal of Dental Science."

J. A. **Swasey**, D.D.S., of Chicago, Illinois, exhibited his Dental Clamps, which are the most simple of anything of the kind yet seen. They are so designed as to fit into the approximating planes or surfaces of the teeth, and carry the rubber dam out of the way of the operator, and at the same time are not as liable to impinge upon the soft tissue or gums, and hurt the patient. They hold the rubber dam firmly in place, can be put into position, and taken away in an instant.

Dr. H. H. Sisson, of New York, demonstrated his Reversible Disc Sheath Holder. This consists of a sheath that covers one-half of the diameter of the sand paper, or other revolving disc, in such a manner as to thoroughly protect the lips, cheeks, and gums of the patient. An operator can get his disc just where he wants it, and at the same time have no fears of cutting other parts of the mouth.

PAPERS.

Wednesday, January 18th, 2.30 p.m.

J. N. Farrar, M.D., D.D.S., of New York, presented a paper. Subject: "Philosophy of correcting irregularities of the teeth." The doctor had made a specialty of, and written upon the correcting of irregularities of the teeth since 1863. We have in the alveolar process during the procedure of moving teeth, 1st.—Reduction or absorbing of the process. 2nd.—We get displacement of the teeth, by bending the alveolar walls. There are certain laws, if advantage is taken of, will greatly assist the operator and benefit the patient.

Regulating teeth by absorption, and the deposition of new bone, takes from one month to a year. Increase of age retards absorption and deposit. Teeth can be moved in some direction faster than absorption can take place. This would be accomplished then by bending the process. Teeth moved in a buccal direction would travel faster than absorption could take place. While lingually, absorption must take place slower, since the resistance is greater. This is true of the superior arch, while in the lower maxilla, the teeth will move faster than absorption can take place, lingually, by a springing of the walls, while in a buccal direction, absorption must take place in order to get any considerable change of position. He approved of a *continuous* elastic force if used moderately. A greater force can be used if a let up is made occasionally, but a moderate continuous force is usually the best.

S. W. Gilford, A.M., D.D.S., opened the discussion by declaring that he approved of continous pressure when it can be applied to permanent teeth. "I am opposed to intermittent pressure. I use any and all appliances. The apex will move but little in comparison to the crown. I have devitalized two pulps because I have applied too much pressure, and moved too fast, and probably by moving the apex of the root too fast also, each patient was over twenty-one years of age. Probably the pulps died, because there was too much constriction on the nerve at the apex. Ordinarily, we can move a tooth without interruption, and without any unfavourable results. A continuous movement will not add to the soreness of a tooth. The most we need to do, to avoid pain, is to keep the appliances, ligatures, and elastics, away from he gums."

E. S. Talbot, D.D.S., of Chicago, Ill., said: "I accord with Dr. Farrar. If we move slowly, we do so by absorption. Forces used are the wedge, screw and inclined plane. The best one is the screw. It holds fast what it has gained. It is best to go slow and have absorption, and hold what one has gained. I am much impressed that the elasticity of metals is to be the coming force to be used. I prefer that force to accomplish the movement. I don't want to have a patient running to me to have a nut turned. I do not want to see them oftener than once or twice a week. In the coil of piano wire a force is stored up, that is very valuable in regulating teeth.

V. H. Jackson, M.D., D.D.S., of N.Y., said: "I advise, like, and use the so-called Coffin methods, I do not believe it is well to cover the teeth with a plate, and do not if I can avoid it. I think it wrong in many cases to disturb the articulation of the teeth."

"How is it best to contract the arch with the least pain to the patient, and least cost to the dentist?"

I make a rubber plate for the arch, and invest, and so construct my plate, as to hold the teeth, that I do not want to move. Should I wish to bring in a certain tooth, I would make room for it, by cutting away, my plate. I should fit and vulcanise into my plate a round piano wire not too stiff, about No. 27, bringing it out from between the bicuspids or molars, as the case would seem to admit of best, brought out on each side of the arch. If the cuspids were out the most, and I wished to bring them down, and within the arch backward, I would have my wire to press on them. As they or any other tooth move, I should bend my wire by shortening it, by making angles in the wire so as to bring the elastic metallic bearings, wherever I wished them to be."

"Sometimes I would make the end of my wire in the form of a clasp around one or both molars on each side, the better to retain my plate. I always leave the wire round, so as not to annoy the mouth, and tin it to prevent oxidation.

Two independent springs can be used, having them lap over the centrals, and attach to their ends an elastic. I do not advise extraction to make room, though sometimes it is necessary. It should be remembered that one can bend the piano wire, which is of steel, just as one desires. By this elastic metallic method, a patient can do much of the work himself. I can carry the centrals back bodily and not kill the pulps.

Norman W. Kingsley, D.D.S., President of the New York State Dental Society, was the next speaker. Dr. Kingsley is considered an authority in the Art of regulating teeth.

He said "I thoroughly believe in what Dr. Farrar has stated in his paper, as the leading principals, in the regulation of teeth, and cannot antagonise him.

Largely his ideas are a new application of old principals. The only difference that would seem to be, is by the introduction, by some of the other speakers, of the piano wire. However, I cannot get the same favourable results, from the use of these metal springs as we do some of the other gentlemen who have spoken here to-night. The last piano spring I had was from one of our best and most wealthy families, who did not for some reason or other, like this Coffin spring plate arrangement, and I lost their patronage, which made me feel anything but happy and contented with such methods.

Thus ends one of the most brilliant and successful meetings ever enjoyed by the dental profession in the United States.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, Held Feb. 6th, 1888.
MR. S. J. HUTCHINSON, M.R.C.S., L.D.S.,
Vice-President, in the Chair.

THE minutes of the last meeting being read and confirmed,

The Chairman read a letter from the President, Mr. Daniel Corbett, in which he stated that his non-attendance was due to ill-health and the stress of bad weather. He hoped that he should be able to read his Inaugural Address at the next ensuing meeting in March. The Chairman felt sure that no words of his were necessary to express the regret which they all must feel at the enforced absence of their President, and the cause of it, and he was sure all would unite in hoping to see the President at the March meeting.

Mr. W. Mitchell, D.D.S. (Mich.), signed the Obligation Book, and was formally admitted to membership by the Chairman.

Messrs. Albert Helyer, L.D.S., 7, Belgrave Terrace, Torquay; William Matthews, L.D.S., 60, Rodney Street, Liverpool; and Jonathan Royston, L.D.S., 60, Rodney Street, Liverpool, were balloted for and elected non-resident, and Messrs. James Francis Rymer, M.R.C.S., L.D.S., 10, Bentinct Street, Manchester Square; Alfred Stevens, L.D.S. Edin. and Ireland, 6, The Terrace, Park Road, Clapham, were balloted for and elected resident Members of the Society.

The Librarian, (Mr. Felix Weiss), reported several additions to the Society's collection, including Mr. Christopher Heath's Lectures upon Certain Diseases of the Jaws, the Proceedings of the Royal Institution of Great Britain; two pamphlets by Dr. Magitot; Notebook for Dental Students, by James Rymer, "Footprints of a Profession," by Dr. C. H. Meriam.

The Curator (Mr. Storer Bennett), announced that the Society was indebted to Mr. Morton Smale for presenting to the Museum the jaws of one of the Sparoid fishes (Bream tribe), but exactly which member of the tribe it was he regretted being unable to state, since no exactly similar specimen was to be found in the collection of the Natural History Museum, at South Kensington. The Society's collection of fishes had been further augmented by the purchase of a very fine example of one of the Gymnodont tribe—a Tetrodont—which was placed on the table for inspection. The council had also purchased four other specimens which were exhibited at the meeting in January; they consisted of the skulls of a female Anubis baboon (*Cynocephalus anubis*), in which the teeth were much worn, but free from disease; a Chacmo baboon (*Cynocephalus porcarius*), much diseased; a male common wolf (*canis lupus*), showing considerable inflammation and absorption of bone, with alveolar abscesses in the upper jaw; and finally, a hyæna, also pathologically very interesting.

The last specimen to which he would allude was the skull of a rabbit, presented by Mr. Howard Mummery, and admirably exemplified the serious injury to which rodents were liable when the due antagonism of their ever-growing teeth was interfered with. In the present instance the right upper incisor had been deflected across the middle line, and, its growth being uncompensated for by the due amount of wear, it had curved upon itself to the extent of three-quarters of a circle, and had then perforated the palate and caused absorption of the vomer. The left tooth, in like manner, had been deflected across to the right side in front of its fellow, and was curved into rather more than half a circle. This left tooth appeared to have been the original source of mischief, for on its outer side, near the tip, was situated an outgrowth of some hard substance (probably osteo dentine) which had evidently been partly worn away by the lower tooth. Both upper teeth presented the appearance of having been injured while in the soft state, at a part half an inch from their present free extremities. The lower incisors were unduly long, and worn on their posterior surfaces. Probably the history of the case was somewhat as follows:—Long ago an injury had been inflicted on the pulps of these upper teeth, causing an inflammatory new formation on the outer side of the left tooth; when this outgrowth, by the advance of time, was brought into antagonism with the lower tooth the due attrition was interfered with, and, (the outgrowth being an obstruction to due occlusion) the tooth was pushed over to the opposite side and in front of the right one; this also being pushed away from its normal antagonism had continued to grow uninteruptedly in its new direction. Once the teeth ceased to be worn by mastication their new false direction would naturally increase.

The Casual Communications were then called, and,

Mr. Storer Bennett exhibited and described the skull of a Guiana Tree Porcupine (*Sphingurus insidiosus*) which had at an earlier period of its history met with an injury to its right lower incisor, from which after some considerable inflammation it had recovered. On examination, the tooth at first sight appeared to have been fractured about half an inch from its anterior extremity, and to be surrounded by a mass of callus transversed by several sinuses, but on making a longitudinal section through the injured part and examining it microscopically, its true nature became apparent. It was then seen that the enamel organ had been partly torn away and the dentine-pulp bent on itself; a mass of osteodentine traversed by sinuses being for a time produced, but subsequently succeeded by the normal hard dentine characteristic of such teeth. Opposite the seat of injury the enamel organ had been pushed from its proper position, and a hernia of the dentine had produced an excresence covered by some rough and badly formed enamel. The specimen itself, with the microscopic section of the injured part and two drawings of the microscopic appearances, Mr. Bennett presented to the Society for the Museum.

(*To be concluded.*)

BRADFORD AND DISTRICT DENTAL ASSOCIATION.

The Annual Business Meeting was held on the 10th of February, in the Eye and Ear Hospital, Hallfield Road, Bradford. In the absence of the President, Mr. A. Cocker, L.D.S., Edin. of Halifax, was voted to the chair. The treasurer's report showed the association is in a very healthy condition, there being a good balance in hand. The work of the Society during the past year has been of a very practical and interesting character. Papers have been read by the following members:— "Hæmorrhage and its treatment," by Mr. Arthur Cocker, L.D.S., Edin. "Notes on Cocaine," by

Mr. A. B. Wolfenden, L.D.S.I. "The Treatment of Pulpless Teeth," by Mr. A. Alex. Matthews, L.D.S., Eng. of Bradford, while many valuable and interesting communications have been contributed by Messrs. Howarth, A. A. Matthews, T. B. Barnby, J. Taylor, C. Rippon, J. Renshaw, and other members. The retiring officers were thanked for their services on the motion of Mr. J. H. Bottomley,, L.D.S., Glasgow, Bradford, seconded by Mr. J. Taylor, L.D.S., Edinburgh, Dewsbury. The election of officers for the year 1888 resulted as follows: *President:* Mr. G. J. Kirk, Bradford; *Vice-President:* Mr. A. M. Matthews, L.D.S., Eng., Bradford; *Treasurer:* Mr. T. B. Barnby, L.D.S.I., Bradford; *Secretary:* Mr. A. B. Wolfenden, L.D.S.I., Halifax; *Committee:* Mr. Arthur Cocker, L.D.S., Edin., Halifax, Mr. C. Rippon, L.D.S.I., Huddersfield, and Mr. J. Taylor, L.D.S., Edin., Dewsbury. Mr. A. Howarth, L.D.S., Eng. then read a very interesting paper on the "Care of the teeth of Children," and was heartily thanked. The proceedings ended with a vote of thanks to the chairman.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

A meeting of the Dental Students' Society took place on February 23rd, at 71, Newhall-street, Birmingham. Mr. W. Palethorpe in the chair. Amongst those present were the following: Messrs. C. Sims, E. S. Sims, G. F. C. Matthews, W. J. Whittall, G. Foster, and P. C. Naden.

The minutes of the previous meeting having been read and confirmed, were signed by the chairman.

Mr. Egerton Sims then read a paper entitled "A description of the permanent teeth," in which he pointed out the difference in their size and shape, also the variation in size and position of the cusps of such teeth as the molars and bicuspids, in order to distinguish their situations in the mouth.

A number of specimens were shown, among them being one of the superior and inferior maxillary bones, exhibiting the teeth as they appear in the normal state, the roots of the teeth in the alveolar process being presented to view by a vertical section of the bone. At the termination of the paper a discussion ensued.

The secretary exhibited models of cleft palate. Some remarks were then made as to the best kind of rubber to be used in those cases in which the soft palate was deficient.

Mr. W. Palethorpe promised a paper on "Alveolar abscess" for the meeting in March, and it was decided to have on the same evening after the ordinary business a social meeting of the members.

A vote of thanks to the chairman terminated the proceedings.

Dental News.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The discussion upon Mr. Stirling's paper upon Soft Teeth in Children (see page 264) being called, Mr. Campbell said—This subject is an interesting one. Cases differ so much from each other that we cannot have definite rules to guide us in practice; success or otherwise must depend on the judgment of the practitioner. We have, however, generally recognised principles which should help us to determine our line of treatment—one of these in conservative dentistry is to do all we can, and we can do a great deal, to save teeth. For my part I would rather go to the extreme in my conservative efforts than to extract a single one which might possibly be saved. With Sullivan, gutta percha, and phosphate cements, we can do a great deal to retain even soft teeth. For these it is often unnecessary to give much pain; by merely cutting the edges of the cavity with a fine cut burr, leaving the soft dentine at the bottom, and otherwise carefully preparing the cavity, a successful stopping should be the result. I have found teeth filled in this manner lasting much longer than I could have anticipated. Where there is crowding, and several teeth decayed, four of the worst opposing bicuspids or molars should be taken out, and an effort made to save the others.

I would much rather fail occasionally than not make an attempt to save the teeth of my younger patients, where there is any prospect of doing so. We should not mind what the public will say or think about our mode of practice; we ought to do our duty.

Mr. Stirling referred to a case where fillings had given way within three months after insertion. This to me looks more like fault in the operator than in the teeth. I have rarely found it necessary to extract all the teeth in either jaw from patients who are still in their teens. When this is done, especially in the lower jaw, I should consider it a great misfortune.

With reference to milk teeth, I think it is greatly to be regretted so little is done to them. I frequently fill these teeth, without, as a rule, doing much to the cavities, using Sullivan or gutta-percha.

Mr. Hepburn said—The subject of Mr. Stirling's paper was a most practical one, and deserved, and would repay, the gravest consideration. There was no doubt that at the present time the general tide of professional opinion and practice rose in favour of conservative dentistry, but he thought it quite possible it might run too strong and too far in that direction, as there must sometimes be a condition of things when any expenditure of time and labour would be useless. No man would be considered wise who would expend his means in propping or plastering up some ruinous old house, the foundations of which were giving way, and the timber in it rotting. Something like the same common-sense and judgment are surely required by the practitioner in the treatment of such cases as are covered by Mr. Stirling's paper. There was a strong and laudable desire in many young practitioners to attempt to save every tooth and root that came in their way; but that desire required the curb at times, and should be used with care and judgment, as they all knew that not unfrequently such attempts ended in failure and disappointment, to the annoyance of patient and practitioner. He thought that in such cases as those referred to in the paper, they had to consider not only the condition of the teeth, but the conditions and surroundings of the patient, as unless the parents are prepared to expend a great deal of time, attention, and money for their preservation, all attempts to save them permanently must fail, and it were worse than useless to begin a work from which no permanent good could be derived. Should it be decided not to make the attempt, then the question of extraction or no comes in. This will depend on the health of the patient, whether they are suffering from the teeth; also whether their extraction interferes with the proper eruption of any other teeth or the development of the alveoli. The proper treatment of all such cases must depend on their individual merits and the experience and judgment of the practitioner.

Mr. Wilson said he agreed with what had been said by Mr. Hepburn. Admitting that at one time there was too decided a tendency to the summary measure of extraction, they were, in his opinion, now going too far in the opposite direction.

He advocated quite as strongly as Mr. Campbell did the retention, by stopping or otherwise, of all the temporary teeth, not causing mischief until their natural shedding. The premature removal of the molars was almost certain to be followed by the moving forward of the first permanent molar, thus losing whatever space the permanent canines might have gained by the lessened space required by the bicuspids. Occasionally it went much further, and the second bicuspid was erupted inside the arch. He mentioned these teeth specially, as they were almost the only temporary ones they had to treat.

The too early removal of decayed first permanent molars was also liable to do harm, while, if done at a later stage, good might result. On the other hand, he considered it a mistake to retain hopelessly decayed or malformed laterals or bicuspids, the spaces caused by their removal being soon obliterated, and overcrowding was a heavy factor in the war with decay.

But Mr. Stirling, so far as he understood, while against the indiscriminate stopping of soft seriously decayed teeth in young subjects, did not advocate their summary removal so long as they led to no complication. He asked them simply to admit that nothing they could do would be of more than a very temporary benefit, not worth the unpleasantness involved to the subject, the trouble to the operator, or the expense, present and prospective, to the parents.

If left alone, such teeth would in most cases soon become level with the gum, when the question as to their retention or removal, one foreign to Mr. Stirling's paper, would come up for decision. As regarded the wholesale removal of decayed teeth, not necessarily beyond redemption so far as stopping was concerned, he considered that when their presence was, in the judgment of the medicalman in charge, the cause of serious nervous affection, and he ordered their removal, the dental surgeon was bound to carry that order into execution.

Mr. Biggs said he concurred in the general sense of Mr. Stirling's paper, but he thought that it was more a matter for individual judgment than for a society to affirm how far we are justified in endeavouring to save soft teeth in children. But for his part, he believed in conservation as far as that was possible or practicable. He had often been surprised at the marked improvement occurring in teeth, he had considered perfectly hopeless. So many things entered into the question that he feared no law could ever be binding on the profession in regard to this matter. For instance, the health of the child and its age were such important factors that no case could be weighed without them. He thought that, however hopeless the teeth might seem, if we considered it important that they should be retained, and explained how temporary our work was likely to prove, declaring, as our object, the maintenance of the symemtry of the jaws and their growth, in fact, giving frankly our opinion of the case and its probable cost, we could then leave it for the parent to decide whether we should go on with it or not. In the case of a patient of 15 years old or so, he did not think it would be acting wisely if all in our power was not done to prevent loss of any of the teeth, except, perhaps, the first molars, because the wholesale removal of teeth at that age meant destruction to the features probably ere the patient reached even 50 years ; besides, the consequent absorption of the alveolar process is occasionally so extensive as to in some instances almost to preclude the wearing of artificial dentures.

Mr. Watson thought it better to endeavour to save soft teeth, both of the temporary and permanent series, as long as possible, unless they were affecting the health of the patient, when it was better to take them out. As regards the benefit to be derived from the use of lime water, he considered it of little service, as it was doubtful if any was assimilated ; more good would probably be obtained from the use of lacto-phosphate of lime.

Mr. Mackintosh said he agreed with the remarks made by Mr. Campbell, and thought it right to try and save even soft teeth, and also the temporary teeth, until the proper time for losing them. He used copper amalgam, which did perfectly well in wet cavities, and tended to harden the tooth.

The President said that the Society was much indebted to

Mr. Stirling for bringing this important subject before them. He thought, however, that he was too pessimistic in the general view of the method of dealing with such cases. It would be admitted by most that no cases were so discouraging and appalling at first sight, as where a child of 10 or 12 years of age is presented with a whole lot of interstitial decays, nothing having been previously done. It often gave one a feeling of hopeless despair, and prompted desperate remedies. Still, in spite of bad appearances, it should be a general rule to attempt to save them, in the hope that with advancing years an improvement would take place. The six-year-old molars in such cases were generally irretrievably lost, but from the bicuspids forward, there was generally something left for conservative dentistry. At present he had a case of a boy of 13 years, where the crowns of both centrals were broken off, the root canal of one with decomposed pulp, the laterals also were badly decayed. Here the central roots were filled and the laterals patched up, in the hope that something might be made of them in the future. It was wonderful sometimes, how hopeless-looking cases pulled through.

Another reason for keeping the roots toward the front as long as possible was that the contour of the mouth was preserved, and it gave the supporting alveolus a chance of solidifying, so that if necessary to remove them afterwards, a firmer basis was left in the way of ridge than if they had been removed early. One of the worst cases he had ever seen, was the case of a lady who had had all her upper teeth removed while she was in her teens. There was no true ridge, only a roll of gum fairly prominent, but very mobile, so that the suction piece, while adhering, could be moved some little way from side to side.

As to the fillings themselves, in the worst case for molars, there could be little doubt that Sullivan's amalgam held them together better, as a rule, than anything else, though oxyphosphate did very well for crown cavities. In weak walled cavities it was a capital plan to line with oxyphosphate and fill with amalgam before the former was fully set, or where there was a doubt as to the healthy condition of the pulp, the cavity may be lined with oxyphosphate and the amalgam put in at another sitting, provided no irritation had occurred in the interval. Where the walls were fairly strong, and able to resist the wedging force, the tin and gold combination served a very useful purpose.

Mr. Stirling, in reply, said :—

Mr. Campbell seems to be quite opposed to what I have said in my paper ; he said he would stop a tooth though it were only to last for a year. So should I in an adult, and especially if it were a front tooth, but not for a *child with soft teeth*. Mr. Hepburn, I think, understands me better when he says that in trying to save soft teeth in children's mouths we ought to consider what is likely to be the future of such teeth, and it is useless to begin to do any work from which no permanent good can be derived. Mr. Wilson says we lose room in the jaws for the permanent teeth when we extract the temporary teeth early, and Mr. Watson, for the same reason, would stop soft temporary teeth, in order to retain them as long as possible. I have said I do not believe any harm will result from the extraction of temporary molars, and Mr. Tomes has recorded a case where he extracted all the teeth from a child of six years old, and the permanent teeth came in in regular and good order. Was that an occasional case, or was it an exception because it was watched ?

We have overcrowding in the permanent teeth when there *has* been, and also when there has *not* been, extraction of temporary teeth. Also, we have *no* over-crowding of permanent teeth after even extraction of temporary teeth. The eye-teeth are the only temporary ones I hesitate to extract.

With regard to what the President said, as to the ultimate loss of alveolar ridge when teeth have been extracted early in life (also referred to by Mr. Biggs), that does not seem to me to be the case. After extraction in old people there is deep absorption of the alveoli, but in young people there is to some extent a filling up of the alveoli, as well as absorption of the walls. Not, perhaps, in every case, but it usually takes place to some extent, and as for the soft palate which has just been referred to by the President, which offers no stability to a denture, we find that at all ages, and it depends, not on the length of time the teeth have been extracted, but on the individual.

The Secretary then read a paper by Mr. Walter Whitehouse (London), entitled:—" Pain after filling." [See p. 269.]

Mr. Amoore referring to Mr. Whitehouse's paper, said it could not agree with Mr. Whitehouse's plan of treating teeth under the conditions referred to, although occasionally useful when, from lack of time, a more thorough treatment was impossible. If the pulp became painful consequent upon filling, and remedial measures were necessary, it could be drilled into from the crown (if a molar), and arsenic applied, and the roots treated in the usual way, and if it were already a dead tooth, and the roots not filled with an unremovable filling, they could be similarly treated through the drill hole. He was by no means inclined to deny the "practical utility" of rhizodontrophy, but thought the practice should be the exception and not the rule.

Mr. G. W. Watson showed a small odontome which had been removed from the place of the second lower premolar. It consisted of a flattened plate of dentine and cementum, which was attached to and slightly buried in the gum, and from the flattened plate ran two small conical cups covered with enamel. A tooth of a similar character was removed from the same place some years ago, and then this one appeared.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

ANNUAL meeting held on Friday, Jan. 13th. Henri Weiss, Esq., in the chair.

The following officers were elected for the ensuing year: *President:* Morgan Hughes, M.R.C.S., L.D.S.; *Vice-President:* Henri Weiss, L.D.S., Willoughby Weiss, L.D.S.; *Hon. Sec. to Council and Treasurer:* Arthur P. Stocken; *Hon. Sec. to Society:* Arthur Fogg; *Council: Past Students:* Jas. Rymer, M.R.C.S., L.D.S., Fred C. Wright, L.D.S., D.M.D., J. C. Fripp, L.D.S.; *Present Students:* F. J. Lankester, M.R.C.S. L.R.C.P., R. S. Faro, J. N. Dunlop.

The President then delivered his valedictory address. Mr. Gaddes proposed, seconded by Mr. Knight, a vote of thanks to the retiring President, for the able manner in which he had filled the office during the past year, which was carried unanimously.

Mr. Weiss replied. Mr. Grusham proposed a vote of thanks to the retiring officers, seconded by Mr. Rushton. Mr. Stocken replied.

Ordinary monthly meeting held on Friday, Feb. 13th. Morgan Hughes, Esq., in the chair.

After the usual formal business the President exhibited a germinated temporary lateral and central and well marked supernumerary cusps and root on a wisdom tooth.

Mr. Grusham showed a Coffin expansion plate, having a etal base.

Mr. Field presented the tooth of a Ray to the Society.

Mr. Rushton brought before the Society a model of a mouth in which the canine had erupted well up in sulcus.

Mr. Fogg exhibited two cases of polypus of the pulps.

A paper was then read by Dr. Maughan, on the "Treatment of Pain," abstract of which will be found on page 263. after which several discussions ensued.

The meeting was then adjourned until Friday, March 3rd.

ARTHUR FOGG,
Hon. Sec.

IRISH BRANCH, BRITISH DENTAL ASSOCIATION.

The second meeting of the Irish Branch of the British Dental Association was held in the Albert Hall of the Royal College of Surgeons in Ireland on the evening of January 28th, at eight o'clock, D.Corbett, M.R.C.S., L.D.S. President, in the chair. A. H. Corley, President of the Royal College of Surgeons, read a most instructive paper, "On the Use of the Lancet in Difficult Dentitions," which was followed by a discussion in which H. S. Sherlock, Professor Stock, W.Booth Pearsall, and the President of the Branch took part. Mr. Chas. Wall read a paper "On Improvements in Obturators for Cleft Palates," which was illustrated with a interesting case. W. Booth Pearsall, F.R.C.S.I. Hon. Sec. Irish Branch Rritish Dental Association, read a paper on "The Dentists' Register in Ireland in 1879 and 1887," which was illustrated with numerous maps showing the geographical distribution of the members of the profession. The President of the Odontological Society of Great Britain exhibited models of "a perforated palate"; W. Booth Pearsall, a set of teeth, native work, Japan; and Mr. W. H. Waite, "Flagg's Dry Heat Gutta-Percha Warmer." There was a large attendance, including A. H. Corley, President R.C.S.I.; Daniel Corbett, M.R.C.S., President-elect of the British Dental Association, and President of the Odontological Society; R. Theodore Stack, M.D.; Robert H. Moore, F.R.C.S.I.; Daniel Corbett, jun., F.R.C.S.; J. McStay, L.D.S. (Belfast); S. G. Reeves, L.D.S., A. J. Watts, L.D.S., Joseph R. Thomson, L.D.S., Chas. Wall, L.D.S., D. M. Smith, L.D.S., M. J. Bloom, jun., L.D.S., J. Bloom, L.D.S., Francis McClean, L.F.P.S. Glas.), H. H. Campbell, L.D.S., Chas. Merrilees, Chas. Tucker, W. H. Waite, L.D.S. (Liverpool), E. M. P. (Murray, L.R.C.S.I., John O'Duffy, L.D.S., and W. Booth Pearsall, Hon. Sec. to the Irish Branch.

Correspondence.

[The editor does not hold himself responsible for the opinions expressed by his correspondents]

L.D.S. "SINE CURRICULO."

To the Editor of the "British Journal of Dental Science."

SIR,

It will interest Registered Dentists to know that it is still open to them to obtain the Dental Diploma "Sine Curriculo" at the Royal College of Surgeons, Dublin.

(*a*) Any Candidate who has failed, is allowed to present himself again for exactly the same examination as the one for which he was unsuccessful.

(*b*) Any Registered Dentist is subjected to the same examination as was in force during the years 1878 to 1884 inclusive, with only the addition of a Practical Examination in Dental Surgery, and in Dental Mechanics.

(*c*) Candidates, *Cum* Curriculo, are subjected to the extended examination, mentioned by the regulations, forwarded by the Registrar to all intending Candidates, without distinction as to classes, a, b, c, above mentioned.

Having been present and seen the examination held on the 13th and 14th inst. when Candidates were examined in these three separate classes, I can vouch for the complete accuracy of the above statements.

As an advertisement has been issued to the effect that the examination for the L.D.S. "Sine Curriculo" *will not* be held after the termination of the present year 1888, I think it my duty to make the foregoing facts known to all Registered Dentists.

I will be happy to give any further information to any intending Candidate who desires it, on receipt of his card.

I am, Yours &c.,

J. W. DUNKERLEY, L.D.S.I.,
6, Summer Villas,
Old Trafford,
Manchester.

APPOINTMENTS.

Mr. William R. Ackland, M.R.C.S., L.D.S., has been appointed Dental Surgeon to the Bristol Royal Infirmary.

Mr. Frank Lankester, L.R.C.P., London, M.R.C.S. Eng. has been appointed House Surgeon to the National Dental Hospital, London, W., *vice* Charles A. Pattinson, L.D.S. Eng. resigned.

ANSWERS TO CORRESPONDENTS.

MASTER JACK is thanked for his communication, but it cannot appear. Cocaine has been very well ventilated, and so unless some novelty or fresh facts connected with its use are introduced in communications addressed to us, we cannot insert them. A mere expression of individual opinion is of little value one way or another.

T.C.C.—It is impossible to say how much anatomy, metallurgy, etc., is needed to pass any examination; the best guide is to obtain some of the standard works, especially those usually employed by persons preparing for the particular examination.

R.D.C.—The next examination will be held in July; apply to the Secretary of the college; one is just over.

R. L. POLLARD.—The only plan, we know of, is to write to the Secretary and ask for the papers, or failing that, to some of those who passed at one of the recent examinations.

BOOKS AND JOURNALS RECEIVED.

L'Avenir de l'Art Dentaire en France, Par E. Lecandey Paris; Journal f. Zahnkeilkunde; Transactions Odontological Society of Great Britain; Transactions Students Dental Society London Dental Hospital, Tranactions Pharmaceutical Society; Chemist and Druggist; Dental Cosmos; Deutsche Monattschrift; Zahnkeilkunde; Revue Odontologique; Dental Review; Glasgow Medical Journal, American Journal of Dental Science; British Medical Journal; The Western Dental Journal; The Pharmaceutical Journal; The Bulleton; The Archives of Dentistry; The Southern Dental Journal.

Communications have been received from:—

Mr. J. F. Colyer, London; Mr. Frank Lankester, London; Mr. Riches, Penarth; Mr. Morton Smale; The Secretary of the London Dental Hospital; "Master Jack"; Secretary of Students' Dental Society; Secretary of Odontological Society; Secretary of Odonto-Chirurgical Society of Scotland; A. B. Wolfenden, Halifax; P. T. Nadin, Birmingham; A. Fogg, London; F. C. C.; F. J. Hartley, Birkdale; Mr. R. L. Pollard, Blackheath.

British Journal of Dental Science.

No. 485. LONDON, APRIL 1, 1888. Vol. XXXI.

ON A REMARKABLE CASE OF ODONTOMES IN A THAR, CAPRA JEMLAICA (HIMALAYAN GOAT).

By J. Bland Sutton, F.R.C.S.*

The case now to be described came into my hands two days after reading a paper before this Society on Odontomes. It concerns a Thar (Himalayan Goat) which died with a large suppurating mass involving each upper jaw. On the right side a sinus discharging pus existed beneath the eye. On opening the mouth the upper molar teeth were found defective, and in the middle of each alveolar border there was a large recess leading into the antrum. These recesses contained a large amount of finely divided hay and chaff.

The skull was bisected longitudinally, and an examination of the sectioned surface showed that we had to deal with two rounded tumours connected with the antra and related to the teeth. Each antrum contained, in fact, a cyst with dense thick walls. The outer shell was of bone, lined with thick fibrous tissue. The interior was occupied with denticles, fragments of cementum, and bone of varying shapes and sizes, amounting to nearly three hundred. Those in the middle of the cyst were glued together by thick pus, mixed with hay and chaff, whilst the peripheral fragments were embedded in fibrous tissue or sprouted from the cyst wall.

Having briefly detailed the anatomy of this specimen we must now consider its significance. In my paper on *Odontomes*, similar cases were included which occurred in thehuman subject. Up to that time I had never had an opportunity of studying these cases in the recent state, and had long been on the watch for one. Under the head of fibrous odontomes I described some tumours occurring in goats, formed of thick fibrous tissue, surrounding the fangs of molar teeth; the outer layer of these tumours being osseous. Embedded in the walls of these tumours were irregular masses of bone. These fibrous odontomes occupied the antra, were in all cases symmetrical, and occurred in young goats. The Thar was twelve years old. The difference in the tumours in young and old goats may be explained as follows :—

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* A paper read before the Odontological Society of Great Britain.

In young animals the odontomes were still growing, in the old goat the walls have become more thoroughly ossified, and the denticles are the result of sporadic ossification in the walls of the cyst. Had the walls ossified *en masse*, a solid, hard odontome—a cementoma—would have been the result.

A careful study of this specimen has convinced me that all those remarkable cases included in my list as "anomalous" odontomes had their origin in aberrant follicles of this nature. I am thus enabled to make my proposed classification more complete by abolishing class E, and including the anomalous odontomes in section B under the term *compound follicular odontomes*. Thus amended the list stands as follows :—

CLASSIFICATION OF ODONTOMES.

A. *Aberrations of the Enamel Organ*—
  1. Epithelial Odontomes.
  2. Calcified Epithelial Odontomes.

B. *Aberrations of the Follicle*—
  1. Follicular Cysts.
  2. Fibrous Odontomes.
  3. Cementomata.
  4. Compound Follicular Odontomes.

C. *Aberrations of the Papilla*—
  1. Radicular Odontomes—
    a. Dentomata.
    b. Osteo-dentomata.
    c. Cementomata.

D. *Aberrations of the whole tooth-germ*—
  Composite Odontomes.

This case further justifies me in including follicular (dentigerous) cysts among odontomes. The various modifications may be arranged thus :—A tooth about to be erupted is completely enclosed in a capsule of bone, loose and open in texture, resulting from the ossification of the capsule.

Should the tooth be retained, fluid will collect between it and the capsule. As a result of this accumulation, we get a *follicular cyst*, the size of which depends upon the amount of the fluid, and may vary from the dimension of a nut to that of an orange. The thickness of the walls are very various; in some instances they are as thin as an egg-shell, in others nearly half an inch in thickness.

A tooth contained in a follicular odontome often has a well-formed crown, but a curious truncated root, as in a specimen from the Museum of the Royal College of Surgeons. (Specimen exhibited).

Among the *Ungulata* such odontomata present very thick walls of fibrous tissue, with very little fluid. The outer limiting walls of these odontomes are osseous, but nodules and laminæ of bone occur in the midst of the fibrous tissue. Such are conveniently termed *fibrous odontomes.*

This thick capsule may almost entirely ossify, or become converted into cementum; this tumour is called a *cementoma*, it is common in horses and ruminants.

Instead of the capsule ossifying *en masse*, sporadic ossification may take place in its substance. In such a case we have the bulk of the tumour made up of small denticles consisting of bone or cementum, or even malformed teeth, varying in number from four or five to a total of more than four hundred. Such a tumour may be termed a compound follicular odontome.

The specimen which forms the subject of this paper is further interesting in that it confirms an opinion I have often expressed regarding odontomes, viz.: the hard tumours we see in museums only represent half the case. Every odontome is furnished with a periodontomal capsule on which it depends for nutrition. When the cyst suppurates, as it is sure to do sooner or later if left to itself, the capsule becomes destroyed, the hard part necroses, and in ordinary cases sloughs out. The suppuration probably arises in this way. Odontomes are practically teeth, and like teeth they undergo a process of eruption. The suppuration usually attendeant on this event attracts attention, and is very frequently the first indication of trouble. In the case of compound follicular odontomes, it seems probable that sooner or later they inflame from mechanical irritation; this leads to suppuration and destruction of the fibrous tissue, leading to necrosis of the denticles.

ARTIFICIAL VELA AND OBTURATORS.*

By E. D. Swain, D.D.S., Chicago, Ill.

The hard palate is a bony plate, forming the roof of the mouth and base of the nose, it is covered by mucous membrane. The anterior three-fourths is formed by the palatal processes of the superior maxillæ, the other fourth is made up by the horizontal plates of the palate bones. The soft palate is a movable curtain attached to the posterior border of the palatine arch, and is continuous with the hard palate. It is a membranous body, controlled by five pairs of muscles, which, in conjunction with the muscles of the pharynx, tongue, and hyoid bone, assist in the action of deglutition, propelling the food into the œsophagus without any portion being permitted to enter the nasal cavity or larynx. During the act of speech, the soft palate is also either raised or depressed to assist in forming cavities of resonance, of greater or less capacity. Your attention is called to the treatment of the deformities of these parts, the most common of which is cleft palate. Congenital cleft palate is the result of a lack of development of the maxillary bones, arising from hereditary disease, malformations during embryonal life, or lack of nourishment of the bones involved.

There are many varieties of form, general appearance and size of clefts. The cleft may extend entirely through the hard and soft palates, and it is sometimes complicated with a complete fissure through the alveolar process, with a split in the lip, known as "hare-lip." Again only the soft palate may be involved, or the hard palate alone may be perforated. Accidental cleft palate is the result of traumatism or disease. Syphilis is perhaps the most prolific in its production. Usually, however, we are gravely informed by patients that they have been great sufferers from nasal catarrh.

Congenital cleft of the palate was at one time as commonly treated by surgical means as by mechanism. The former treatment, however, has to a considerable extent been abandoned, because the operation is a painful one to the patient, and difficult for the operator. It often fails to close the cleft because of sloughing away of the stitches or sutures used to hold the parts together. It sometimes fails to improve the speech, even when a complete closure is effected by the operation, because the soft palate has been made too short and tense to properly close the nasal passages by its contact with the posterior pharyngeal wall, which is absolutely essential to produce all, excepting the nasal sounds.

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* Read before the Chicago Dental Society, and reported in the *Dental Review*.

Among the important evils resulting from cleft palate, are difficulty in sucking and swallowing in infancy, and an imperfect articulation in after life. Owing to the two first, many children born with cleft palate die from starvation, devices in the form of rubber nipples, so constructed as to cover the roof of the mouth, thereby closing the passage into the nose, have however saved the lives of many.

The faulty articulation remains a serious affliction to the individual, as well as to all with whom the person attempts to converse ; to obviate this difficulty the surgeon and dentist have each contributed much thought and experience. The difficulty arises from an inability to close the passage between the mouth and nose, this condition is described by Salter in the following language : "When the mouth is closed in effecting certain articulate sounds, the sound instead of being completely stopped, as it is in the natural condition of the parts, is continued on through the nose, so that letters requiring a complete stoppage of the air can not be pronounced if the palate be cleft, but are converted into certain other words or letters which correspond to them."

As I am not familiar with the science of vocal sounds, I shall not attempt to elaborate upon this theme beyond a further quotation from Mr. Salter illustrating the effects produced. He says, "There exist three straits, or points of stricture, where the passage of air and sound may be suddenly shut off at will, or suddenly started. These are at the lips, the teeth, and the soft palate. The closure at these several points is produced by the apposition of the lips, by the pressure of the margin of the tongue against the upper alveolar arch, and by the contact of the root of the tongue with the dropped soft palate.

"The letters formed at the first point, are called labials ; those of the second, dentals ; those of the third, palatals. But at each of these three points, methods of closing, or starting vocal sound may be varied in three ways, giving nine sounds or letters :

"1st. The stoppage may be completed with gentle breathing.

"2d. With aspirate breathing.

"3d. The stoppage may be complete only at the mouth, thus forcing the breath through the nose.

"With a closure of the lips with gentle breathing, I pronounce 'B,' the same with aspirate breathing becomes 'P,' but if the lips are closed, and the sound carried on through the nose, it becomes 'M.' So with the dentals. With a closure of the lips, gently breathing, we have 'D'; aspirate breathing, 'T.' With the nasal combination, we have 'N.' With the palatals, we get by the same process, 'G' hard, 'K' aspirate, 'N G.,' palato-nasal.

"Now what the cleft palate does, is to change the mutes B, P, D, T, G hard, and K, into nasal semi-vowels—M, N, and N G; for by destroying the integrity of the party walls between the mouth and nose, by establishing between them a communicating cavity, it renders it impossible for any oral closure to bring the escape of air and of sound to an absolute stop. Arrested at the lips, or alveolar arch, it continues to escape through the nose. This explanation is proven not only by the physical necessities of the case, but by the fact that pinching the nose of one with a cleft palate, enables the person to pronounce the labial and dental mutes."

The following examples are given by Mr. Salter, to illustrate the changes produced by cleft palate:

"Both brothers drove in a gig to Dorsetshire," would become: "Moth mruthers nrove in a nging noo Dorsenshire."

"David caught a bad cold," becomes "Navid ngaughn a man ngoln." Bride becomes Mrine; Bad becomes Man; Tape becomes Name; Dagger becomes Nanger.

This is exactly the reverse of what takes place with a cold in the head, or in case of nasal polypus, where the nose being already stopped, the stopping of the mouth stops every thing, and the nasal semi-vowels are converted into their corresponding mutes. M into B, N into D, NG into G hard. Thus, "The afternoon was fine, though the morning was rainy," becomes "The afterdood was fide, though the bordig was raidy."

External deformity from cleft palate only occurs when the cleft extends through the alveolus and lip, producing hare-lip; an early operation by the surgeon is usually successful, and (except in extreme cases) there remains but a slight scar when adult age has been reached, to mar the symmetry of the upper lip. The person so afflicted, however, still suffers through life from difficult deglutition, and, as I have just attempted to show, from difficult articulation; and to remedy these two difficulties, the skill of the surgeon and dentist have been enlisted.

When the first attempt was made to provide an obturator, or artificial velum, is not known, but there exists evidence that as far back as the fifteenth century mechanists endeavoured to stop the breach by artificial means.

In 1649 one Isaac Guillemeau published a treatise upon this subject, in which he mentions the name given to appliances made for this purpose by the Greeks.

1552.—Hollerius proposed to stop the aperture with wax, or sponge.

1563.—Alexander Petronius suggests wax, cotton wool, and sponge. He is the first to mention a gold plate, with a sponge attached.

1579.—Ambroise Paré recommends that "the cavity be covered over with a gold or silver plate, made like unto a dish in figure, and on the upper side, which shall be towards the brain, a little sponge must be fastened, which, when it is moistened with the moisture distilling from the brain, will become swollen and puffed, so that it will fill the concavity in the palate, that the artificial palate cannot fall down, but stand firm, as if it stood by itself."

1649.—Isaac Guillemeau gave a drawing of a gold plate and sponge similar to Paré, but says "as it is not always possible to adapt the plate perfectly, a lining of sponge, or lint, should be applied.

1685.—Nic Tulpius recommends the same mode of treatment.

1715.—Garangeat improves Paré's instrument by the addition of a stem, in the form of a screw or nut, to hold the sponge in place, and proposes moistening the sponge with water before insertion.

1723.—Fabricus Heironimus recommends sponge and lint, on a silver plate. He is, however, the first writer who discriminates between congenital and artificial clefts.

1734.—R. Wiseman, sergeant surgeon to King Charles II, recommends filling the cleft with a paste compound of myrrh, sandarac and other ingredients, but does not tell us how paste palate was retained in its place.

1739.—Heister returns to the gold or silver plate with sponge attachment.

1754—Astrue, in a treatise on syphilis, recommends, for the first time, a silver button attached to a plate of the same material.

1786.—Pierre Fouchard comes to the front with an improvement, complicated to be sure, but refreshingly new. His improvement consists of metallic wings attached to a screw and nut, the screw working through a tube upon a metal plate. By use of the nut the wings were forced back, and at the same time spread, so that a curtain of sponge attached to them closed the aperture.

It will be observed that for two hundred years prior to Fouchard, no practical advancement had been made.

In 1820, M. Delabarre mentions the use of elastic gum in the restoration of the velum and uvula.

1828.—Mr. Snell announces that he first obtained a correct model of the mouth, on which he mounted and fitted his obturator. This is the first mention made of securing a model. A further description by him of his method shows that with metal plate and elastic gum he laid the foundation, theoretically and practically, for all that has since followed.

1845.—Mr. Stearn constructed an appliance upon the Snell principles, introducing the spiral spring to sustain the elastic gum velum. He also constructed wings, with grooves, into which the edges of the cleft were supposed to fit.

1857.—Mr. Sercombe mentions the use of vulcanised India rubber. His velum was constructed of two pieces of vulcanite, one extremely thin and large enough to close the cleft, the other of the same form, but smaller and thicker, simply to reinforce and sustain the larger, which he found sagged when loaded with mucus. This velum was stitched to the gold plate.

In 1862, Mr. Williams exhibited an obturator, the portion covering the hard rubber, the velum of soft vulcanised rubber.

1864.—Dr. Norman W. Kingsley brought before the Odontological Society of Great Britain his method, which, though similar to that of Mr. Stearn, was a great improvement. So far as the record shows, he was the first to recommend plaster of Paris to secure an impression. Also the first to advise preparing the elastic rubber velum in metallic moulds, thereby rendering duplication of them a simple and easy matter.

Though somewhat modified by himself and others, his obturator is the one in most general use throughout the world. Obturators should not be inserted before the child attains the age of twelve, or until the permanent teeth are erupted, for harm may come to their arrangement, and the plastic alveolar ridge be spread, thus widening the cleft. The requirements of an obturator are: That it should be constructed of a material which admits of being moulded to any required shape and retain this shape to the end. That the material must be one which will not absorb to any extent the fluids found in the oral cavity. That when ready for insertion, it shall have been so constructed as to fully close the cleft in the hard palate, extending high enough to nearly close the nasal passages, and to this should be attached a velum a little wider than the cleft in the soft palate, extending back to the pharyngeal wall without undue pressure upon any point. Pressure incites irritation, and if continued, absorption, which, in time, might enlarge the cleft. Hence, all appliances, such as sponge, lint or springs, which depend on pressure upon the sides of the cleft, are objectionable.

In vulcanite, hard and soft, we have the only known material filling all these requirements.

The first and most important question to be considered is the method of securing an impression. The conditions are such that an impression, of all the parts involved, cannot be taken at once; in fact, a correct impression of the parts of the soft palate involved, cannot be secured at all, because of their flexibility, irritability, and liability to contract, and sometimes quiver when touched by a foreign substance; no amount of previous treatment by the operator will overcome the flexibility or contractility of these parts. Treatment will, however, overcome the irritability, prevent retching by the patient, and make the labours of the operator much easier and more certain.

The best material in our hands is plaster of Paris: the reasons must be patent to all.

Dr. Kingsley gives two or more methods. One is, to use the usual impression tray, extended back to the posterior line of the palate bones, with gutta-percha base plate; first fill the cleft in the hard palate with the mixed plaster, using a flexible spatula for the purpose, coating quickly with soap or oil and having the tray ready to insert at once, both bodies of plaster being soft to conform to each other. When hard enough to break with a clean fracture, remove the palata\

impression and then with a strong pair of tweezers, force that above the fissure backward into the cleft of the soft palate, and remove from the mouth; the two parts are then placed in position, the rough surfaces on each answering for guides. For the other method, he forms a tray out of base-plate gutta-percha, for the palatal impression, warming the gutta-percha and moulding it, as near the proper form as possible, that the minimum amount of plaster only be used; this is removed and cut away smooth where the fissure is indicated; a guide is then cut, and a hole made through it for the insertion of a rubber tube attached to an ordinary vaginal syringe; the impression is returned to the mouth and the piston of the syringe (which is filled with a thin mixture of plaster) is quickly inserted, the tube passed through the hole, and sufficient pressure exerted to fill the fissure; the tube should be removed before the plaster has set sufficiently hard to make its removal difficult or impossible. No careful operator would have returned the palatal impression without first soaping or oiling that portion with which fresh plaster was to come in contact. This impression is removed from the mouth by the same method as described for the first one.

For securing an impression of the cleft of the hard palate, Coles recommends a tray made of pewter, in two pieces, like two spoons, with one-half the bowl cut away to make them rights and lefts, the handles fitted to lie one upon the other, to guide in placing the two halves together, after removal from the mouth. One-half is loaded with plaster and carried into and against one side of the cleft; when hard, it is removed, trimmed smooth on its mesial surface, and coated with sandarac varnish; when it is dry, oil, replace in position and the other half is loaded with plaster and carried into position, against the other side of the cleft; when hard, the half first made is removed by crowding backward, as in the other cases; upon removal of the other half, they are placed together as indicated by the handles, cemented, and the model for subsequent work secured.

The method I have resorted to is a modification of this last one. Take a common tin spoon, such as are now stamped, and cost almost nothing. The tip of the bowl is cut off, usually leaving two-thirds. This is split through its centre, from behind, towards the handles, as far as the case requires. The halves are then formed with fingers and pliers to conform to the shape of the cleft; if necessary, additions to it may be made with base plate gutta-percha. The handles may be bent to throw the tray higher or lower, as required ; this is loaded with fine quick-setting plaster, adding a pinch of salt to the lukewarm water, in which it is mixed : carry into the cleft a little back, and draw it forward and hold steadily until it is hard enough to remove. This is accomplished by carrying it far enough backward to disengage it from the cleft, and removing from the mouth, which occupies less than half the time of either of the two last methods, relieving the patient from the most disagreeable part of the operation. From this impression a mould is secured, divided into two pieces at the mesial line of the cleft ; from this a model is made in paraffine and wax or plaster. This is trimmed at its posterior border to a line with the palate bones. To it is added a sheet of tough wax or gutta-percha, which is trimmed and moulded to the proper size and form of the desired velum. If a soft rubber one be desired, pieces of plaster may be formed about this, to be duplicated in tin, care being taken to so place the plaster pieces that they can be moulded in a common moulder's frame, drawing without breaking the sand used. When it is desired to secure the palatal impression, the model may be trimmed so that the palatine surface edges will come a trifle outside the cleft, the edges bearing upon the palatal bones ; through the model make a hole so located as to hold it in place, with a string passed out through the nostril. For carrying the string into position, a needle made of wire, bent to a half circle, with an eye in one end, is used. All being ready, the string attached to the model is carried to its place, and gently held in position by an assistant or the patient. The palatal impression is then secured, as in any ordinary case, for artificial dentures. Before obtaining this last impression, however, a gold pin should be prepared with a stud on one end, in this manner ⊥, placed in the model with a stud end on its palatal face. This pin is vulcanized into the palatal plate, the mark made in the impression by it giving it, when replaced there, the proper place and direction, and to it is attached the velum. All vela should be considerably convexed on their upper surfaces, sloping to the rear, to admit the draining off of collecting mucus.

In 1872 or '73, Dr. Gunning, of New York city, advocated constructing obturators and vela of hard vulcanized rubber.

As to the success attending the use of these appliances, I am compelled to admit that it is doubtful and varied. While the piece may be everything desired from a mechanical standpoint, so much depends upon the judgment, patience, and pride of the wearers in their use, that one hardly ever feels a confidence and willingness to commence, expecting success. I will, as briefly as possible, report a few cases from my own practice.

Twelve years ago George Williams, a German, aged 27 years, was brought to me by a Wisconsin physician. The cleft in this case involved both the hard and soft palate, and, as usual, the largest half of the opening was to the left of the median line. By the methods mentioned, I secured an impression, made and inserted an obturator—the palatal plate of hard, the velum of soft vulcanite. The man spoke English very little, but his physician informed me that his German, which was hardly recognized as such, was in a week's time quite improved. I prepared for him two extra vela, and taught him how to place them: he started for home much pleased. I heard nothing from him for two years, when he entered my office, with the appliance in his pocket. He informed me that it had been in every way satisfactory, until by accident he lost the thumb and two first fingers from his right hand, since which time he had not been able to insert it. I made for him an instrument, and taught him to insert it with his left hand, aided by the instrument.

A lady from Marshalltown, Iowa, about 30 years of age, a music teacher by profession, was advised to come to me for help. The cleft was large in the soft palate, and extended into the hard palate about two-thirds of the way to the teeth. I constructed an appliance of hard and soft rubber upon the same principles as the last mentioned. After a week's wear I pronounced it a decided failure. I then made one for her after Gunning's method, entirely of hard rubber. I first made a wax model of the fissure in the hard palate, added the velum, and then flasked and vulcanized, polishing perfectly. This I inserted, held it in place with the string attachment, took an impression for palatal plate, vulcanized it to the first part, making one piece. This proved quite a success. Soon after returning home she wrote me, "My friends hardly knew me, because of my improved speech. I am able to sing very well some of the Sunday school songs." Since then I have made four; two were partially successful—the other two failures, so far as improvement in speech was concerned; but all have aided in swallowing, smoking, etc.

TOOTH EXTRACTION AND ITS COMPLICATIONS.

By Mr. Frederick Tod.

Mr. President and Gentlemen,

In the short paper I am about to read this evening, I propose to call your attention to the various accidents and emergencies which may arise in connection with tooth extraction. I have endeavoured in writing this essay to confine myself as much as possible to personal observations rather than selecting cases from our standard works. But as there are many complications which I have never met with, I have been compelled at times to refer to these authorities.

For the sake of conciseness I propose to divide my subject into the following heads.

1st. Accidents to the teeth themselves.

2nd. Accidents to the maxillæ.

3rd. Injuries to the soft parts, as laceration of gums, vessels, etc.

4th. Complications connected with certain reflex action and diatheses.

5th. Accidents occurring under anæsthetics.

I think I may safely presume that all present are fully conversant with the ordinary details of extraction; and therefore I shall pass them over, merely mentioning the operation of extracting the lower wisdom tooth with the forceps. In this case instead of following the ordinary rule of making greater pressure on the outer alveolus during the detaching movement, it will be found much easier to put the pressure on the inner alveolus, as it will be remembered that the inner alveolar border, at this particular part of the inferior maxilla, is much thinner than that of the outer, and, therefore, more readily gives way.

I now come to the more important part of my paper, namely: Complications in connection with tooth extraction. Accidents to the teeth themselves. The commonest of these is fracture of the tooth we wish to remove, and this may be caused by failing to obtain a sufficiently good hold by neglecting to pass the blades of the forceps high enough up the

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* A paper read before the Students' Society, Dental Hospital of London.

root or roots; and again by applying too much pressure on the handles of the forceps so that the crown of the tooth is crushed.

Certain peculiarities of the teeth or jaws themselves are a fertile source of this mishap, both in using the forceps and elevator. These are exostosis of the roots, or the fang may be divergent, or twisted. A crowded state of the teeth, so that it is often quite impossible to get the blades of the forceps in anything like a good position; again, fusion of two or more teeth; and, lastly, abnormal density of the alveolus. In connection with this heading, I intend to include injuries to neighbouring teeth; these may be loosened in their sockets by the force used during the operation, so much so indeed that I have seen one or two cases in which the detachment has been so great that the teeth had eventually died and had to be extracted on account of abscess of the roots. Occasionally we find that the tooth to be removed comes out with a jerk, and the forceps striking the opposing tooth, fractures a cusp. This accident occurs most commonly with the lower bicuspids, and, therefore, especial care should be taken in extracting these teeth. It not rarely happens whilst using the elevator that the tooth used as the fulcrum is loosened in its socket or fractured.

In extracting temporary teeth, care should be taken to avoid introducing the blades of the forceps too deeply, as I have seen in one or two cases, the permanent as well as the temporary tooth brought away. Perhaps I should have mentioned that there *are* recorded cases, in which, by some oversight, the wrong tooth has been extracted. This is, indeed, a very dreadful accident, especially for a dentist in private practice.

INJURIES TO THE MAXILLÆ.

Certainly by far the most frequent is fracturing a small portion of the outer alveolus, which is connected with the roots of the tooth; this is an accident of but little importance, although it may be followed by necrosis and exfoliation of a much larger portion of the bone, or half the horizontal portion of the maxilla itself, together with the teeth connected with it. This necrosis is much more likely to occur in patients suffering from syphilis, advanced phthisis, or mercurial poisoning, and also in workers in phosphorus, or more rarely in those exposed to the fumes of carbon bisulphide. Necrosis may follow the extraction of a tooth, even without fracture of the alveolus; but from my own observations, I am inclined to think that in some of these cases the irritation of a dead tooth had already produced such an acute inflammation, as to cause the death of the bone before extraction, but only noticed after that event. I have lately met with two cases which tend to confirm this opinion; both occurring in young subjects, and neither apparently due to previous injury. In these I observed on removing the tooth, that the sockets, instead of presenting their natural pink colour, and bleeding freely, were dark brown, together with an almost total absence of hæmorrhage; in the course of a few days the diseased sockets disintegrated until healthy bone was reached, which then went through the usual process of healing. Again, a larger portion of the outer alveolus may be torn away than that surrounding the roots of the tooth, thus loosening, or, perhaps, even more commonly causing the death of one or more adjacent teeth. I recollect a case of this description, in which the first upper molar was extracted under gas, and firmly attached to it, was a portion of the outer plate extending forwards to the first bicuspid, and backwards to the second molar. Mr. Salter records a case, in which, while endeavouring to remove an upper central incisor, the bone was fractured along a line corresponding to that which separates the intermaxillary from the maxillary bone, and along a horizontal line at the base of the nose; there was also a wound in the palate from which there was considerable hæmorrhage. Mr. Catlin again mentions a case in which the crown of an upper wisdom tooth was broken off in attempting to extract the roots with the elevator; the instrument slipped, and broke away the tuberosity of the superior maxilla, a portion of the floor of the antrum, and the pterygoid plate of the sphenoid bone. In endeavouring to remove the fractured bone with the stump forceps, the tooth and hamular process of the internal pterygoid plate together with some fibres of the internal and external pterygoid muscles were torn away, and finally the patient became perfectly deaf on the injured side, and the movements of the jaw were restricted. Another case of a like description occurred at this hospital, in which, in the attempt to extract the first lower molar, the alveolus was fractured at a level corresponding to the apices of the teeth, so that a portion of bone containing the bicuspids, canine, lateral and central incisors, was detached, followed by necrosis and abscess of jaw.

Dislocation of the inferior maxilla on one or both sides may take place, especially when much force has been used, and the ligaments of the temporo-maxillary articulation are unusually lax. This need not be considered a serious complication; the reduction generally being quite simple.

Lastly comes the very serious, but fortunately, rare accident of fracture of the lower jaw. This *contretemps* may almost be looked upon as a thing of the past, now that the forceps are used instead of the key, yet we do hear of such cases and, therefore, I do not think it altogether out of place to call your attention to the fact; and at the same time to remind you that all such fractures are of necessity compound, and of a much more serious nature than a simple fracture; although so far as my surgical experience goes, fractured jaws usually do satisfactorily under treatment. One other complication I should like to mention before leaving this heading. It is the mishap of forcing the second upper bicuspid into the cavity of the antrum. I have only seen one such case, and that occurred at this hospital. Unfortunately, I cannot give you any further information of the after result, but, perhaps, some gentleman present may have seen the same case and be able to supply the details.

INJURIES TO THE SOFT PARTS.

Laceration of the gums is of constant occurrence in extraction of buried stumps, especially if they be at all firmly fixed in the jaw, it being in these cases often necessary to introduce the blades of the forceps outside the alveolus; as a rule, such lacerations heal without any serious result, but they may be accompanied with much contusion resulting in sloughing—or cellulitis of side of the neck and face. Such a case was brought to my notice by my friend and colleague, Mr. Richard Andrews, in the person of a man, aged about 30, much addicted to alcohol, and in whom the extraction of a lower molar stump connected with a small abscess was followed by extensive cellulitis, necessitating free incisions and drainage.

In some cases in which the gum is excessively dense and adheres firmly to the necks of the teeth I have seen large portions torn away from the alveolus, fortunately, however, without any serious consequences.

In cases of hypertrophy of the tongue, due to chronic glossitis, etc., that organ is apt to get injured or even considerably lacerated by the blade of the forceps penetrating it. This accident is more likely to occur when the patient is under the influence of an anæsthetic, on account of his having no control over the muscles, and the period for operating being necessarily short.

The roots of the lower wisdom teeth have been known to embrace the dental nerve, and having been extracted the nerve has been torn asunder, causing temporary paralysis along the course of its distribution. In a case of my own the removal of a third lower molar was followed by anæsthesia over the distribution of the mental nerve for a short period, this I attributed at the time to contusion of the dental nerve.

My next subject is hæmorrhage, and it is one of great importance to the dental surgeon. In our standard works on Dentistry it is usually divided into primary and secondary; the first, occurring immediately after the extraction of a tooth, and the second after the lapse of a few hours; this variety corresponds to surgical reactionary hæmorrhage, for true secondary hæmorrhage only takes place after the lapse of three to twelve days.

Profuse bleeding from the socket of a tooth is not uncommon, especially if there is any acute inflammation present, and may require treatment either in the form of ice, plugging the socket with wool saturated with tinct. ferri perchlor, tannic Acid, matico, or other hæmostatic, as the cautery, etc. Another useful method, and one I can strongly recommend, is syringing the socket out with hot water, about 110 deg. Fah. I believe it causes less shock to the nerves, and in all probability tends to relieve the aching pain which invariably follows the extraction of a tooth. I was led to adopt this remedy from finding it of so much value in flooding from the uterus after labour, and it is also used to arrest the general oozing from stumps after amputation. By employing any of these means, however, there is usually no difficulty in arresting primary hæmorrhage. Bleeding occurring after the lapse of a few hours most commonly takes place at night, the patient awakening and finding his mouth full of blood. I had a very interesting and instructive case in my own practice, in a gentleman, aged 40. About midday I extracted two roots of the first lower molar; there was no marked hæmorrhage at the time of operation. At about 5 o'clock the same day, he returned with profuse bleeding. I cleared the socket of all clots, and firmly plugged with wool saturated with tinct. ferri perchlor, but without the slightest improvement; after an interval of about five minutes I removed the plug and thoroughly examined the mouth. I found the hæmorrhage did not proceed from the socket, but from an artery of considerable size, situated just below the level of the gum in the inner side of the alveolus, and which I believe was an abnormally placed mylo-hyoid artery, or a branch of it. Eventually I arrested the bleeding after a few hours, by vigorous application of nitrate of silver.

I have yet to mention before quitting this part of my subject, the accidents which may occur to the soft parts from the slipping of the elevator in extracting the lower wisdom. These may be briefly summed up as perforation of the tongue, the floor of the mouth and the tonsil.

Many present have doubtless seen various reflex affections produced by the presence of diseased teeth, and occasionally though much more rarely, we see similar, though a less numerous variety of reflexes, following the extraction of teeth. The commonest of these is unquestionably syncope, and is produced by the connection of the fifth cranial nerve with its numerous ganglia, and through them with the sympathetic system.

In hysterical patients the pain caused by the operation, or the excitement attending it, often suffices to bring on an attack.

I have seen three cases of epileptiform convulsions following extraction, two in the dental department of St. Thomas' and one in this hospital; but in all these, the patient had a previous history of epilepsy.

A case of tetanus is quoted by Dr. Döbbelin which came on immediately after the removal of a tooth. This is particularly interesting, as tetanus usually comes on after the lapse of 3 to 10 days after injury. Mr. Sercombe also quotes another interesting neurotic affection, in which extraction was followed by paroxysmal uterine pain, but it cured an obstinate leucorrhœa from which the patient was suffering.

Another case which occurred in my own practice is of interest, although, perhaps, I ought scarcely to mention it in this paper, as the complication did not follow extraction. The patient, a female, aged about 40, single, came to me with an exposed nerve in a second lower molar. The instant I touched it with a probe, although very lightly, she began to develope convulsive choreic twitchings in the face, from thence they spread to the head and neck, then to the arms, and afterwards all over the body. The attack lasted from about five to ten minutes, and then passed gradually off. On inquiry I found she had had chorea from the age of about 28. I had a difficulty in obtaining any definite history of the original cause, but concluded it had in all probability followed pregnancy.

Various diatheses such as hæmophilia, purpura, scurvy, chronic jaundice, and Bright's disease, greatly increase the dangers of extraction, the hæmorrhage at all times being very severe and sometimes even fatal. Hæmophilia, which may be defined as an abnormal tendency to bleed, is always congenital, and most frequently hereditary. Although almost always confined to males, it is occasionally met with in females, but they are certainly very far less disposed to it than men. Dr. Wickham Legge quotes several cases of this condition in women, and one has come under my own personal observation, in a girl aged about 12 years. With regard to the pathology of this peculiar affection, but little is with certainty known. It is stated that the inner coats of the arteries are abnormally thin, or that there is a want of contractility in the vessels, the blood according to Mr. Beck being found to coagulate naturally. The hæmorrhage in these cases is always of an obstinate oozing character, and usually defies all ordinary methods for arresting it. There are several cases on record in connection with dental surgery, which have ended fatally. Mr. Wagstaffe, in the *Lancet* of Oct. 29th, 1879, mentions such a case; and again in the *Medico Chirurgical Society's Transactions*, Vol. 8, Mr. Richard Blagden records another, in which a second upper molar was extracted; profuse and continued bleeding followed, all means of arresting hæmorrhage having failed. Five days after the operation, Mr. Browdie, as a last resource, tied the carotid artery; profuse hæmorrhage took place from the incision also. The operation proved unsuccessful, and the patient died on the seventh day after the removal of the tooth.

Mr. J. W. Elliott, the late dental surgeon of St. Thomas's Hospital, with whom I served my pupilage, quotes a case, which, although not fatal, was certainly alarming. A gentleman of middle age and apparently in good health, whose brother had died from hæmorrhage after extraction, had a very loose stump removed. Bleeding commenced 24 hours after. Tinct. ferri perchlor. and ice failed, the hæmorrhage being finally arrested by powdered matico, then a firm dossil of lint, and a bandage round the chin. A case showing the hereditary nature of this affection has occurred in my practice since I commenced writing this paper. A young gentleman about 18 years of age came to me complaining of pain in an upper molar. It was decayed, and apparently setting up much irritation, so I advised its removal. Considerable bleeding followed the operation, which hot water and tannic acid failed to arrest, but by means of a firm plug of wool saturated with tinct. ferri perchlor. I succeeded in stopping it. The hæmorrhage being severe, I inquired into the family history, and learned that both his grandfather and father were subject to severe hæmorrhage after slight injuries. Mr. W. G. Ranger, late dental surgeon of St. Thomas's Hospital, has called attention, in a paper read before the St. Thomas's Hospital Medical and Physical Society on Hæmorrhage, to the occasional occurrence of especially enlarged apical foramina, with corresponding vessels, and though this condition may obtain without excessive hæmorrhage being the result, it may give rise to troublesome bleeding.

In 1775 a French dental journal describes a case of a seaman having scurvy who had a canine tooth extracted, which ended fatally on the ninth day. All means failed to stay the hæmorrhage, the bleeding area gradually spreading until, "there was not a single spot in the whole mouth from which blood did not issue."

I now come to the concluding portion of my paper. The slipping of foreign bodies into the air passages during anæsthesia. Fortunately, it is of rare occurrence. *The British Medical Journal* mentions two fatal cases of extracted teeth slipping into the larynx whilst the patient was under gas, and others which were not fatal. In the *American Dental Record* for Nov. 1881, a case is reported in which the patient, after the extraction of thirteen teeth under gas, suffered from dyspnœa and pneumonia. Six days after the operation a tooth was coughed up followed by immediate relief of symptoms.

Mr. Clover mentions a fatal case in which aportion of a spring gag lodged in the larynx of a child. Tracheotomy was performed, but the patient died of bronchitis a few days later.

Perhaps the most unique case on record is one quoted by Sir William McCormac, in the *Lancet*, of Jan. 2nd 1886. The patient, a female, aged 24, was admitted into St. Thomas's on

Nov. 23rd 1885. Seven weeks previously she had had several roots extracted under chloroform. Whilst an upper bicuspid was being removed, the palatine blade of the forceps broke off at the shoulder, at the same moment the patient made two or three deep inspirations, and the broken blade of the forceps disappeared. Indeed it had passed through the glottis into the trachea. The patient then had a violent fit of spasmodic coughing and became much distressed, on regaining consciousness she had intense dyspnœa, and complained of severe pain in the chest at a point one inch to the right of the sternum between the third and fourth ribs. Several unsuccessful attempts were made to dislodge the blade, as emetics, inverting patient, etc. She remained in bed and had fits of coughing, accompanied by pain and thick expectoration, on one or two occasions she thought she felt the foreign body move. On admission she had symptoms of bronchitis of right lung, and after careful examination it was concluded that the blade of the forceps was situated in the right bronchus. The patient was put under chloroform on November 26th, and the trachea freely opened below the thyroid isthmus. With much difficulty the blade was removed with a pair of polypus forceps. It had lodged in the right bronchus at its bifurcation, about four inches below the tracheal wound. The patient made an uninterrupted recovery.

Gentlemen, you will have observed that the treatment of the various accidents after extraction has been either omitted or only casually touched upon. My reason for this was twofold. 1st. Treatment, if taken at all, should be discussed thoroughly and the time at my disposal did not allow of this. And 2nd. I rather wished my paper to be an epitome of the contingencies we should, if possible, guard against than a feeble copy of a text book.

In conclusion, I beg to thank you heartily for the kind attention with which you have listened, and trust that my paper may have proved not only of some interest, but that it also has conveyed a few hints which may be of value to you in actual practice.

THE MANAGEMENT OF PULPLESS TEETH, FROM THE STANDPOINT OF DAILY PRACTICE.

By A. W. Harlan, M.D., D.D.S., Chicago, Illinois.

(*Concluded from page* 253.)

Cold or dormant abscess.—The rubber-dam being adjusted and the tooth and drill bathed in terebene or terpinol, the pulp chamber is entered. The contents of the chamber and canal are at once bathed with a penetrating disinfectant, which is allowed to remain for a few minutes. The *debris* is removed and the pus or watery exudation is drained through the canal. The peroxide and bichloride solution aforementioned is then injected or pumped into the territory beyond the apex of the root until it will come out clean; the roots are not drilled or reamed unless they are carious. A slender strand of cotton wool, saturated with terpinol or other essential oils, is packed in the root, not very lightly, and the pulp chamber filled with dry cotton, over which is packed some soft gutta-percha. This is perforated to allow air or any mephitic gases to escape. The patient is dismissed for ten days. On his reappearance the dressing is removed, the tooth being left dry. In most cases it will be found that the cold abscess has disappeared; this is determined by the absence of pus or moisture, and freedom from tenderness on percussion of the tooth. Should moisture exude into the canal the treatment must be repeated. The secret of the value of a root-dressing composed of one or more essential oils is this:—At a temperature a little less than 95deg. Fahr. camphors are slowly but certainly deposited from the oils, and vaporized almost immediately, so that the recently cleansed surface of a dormant abscess is stimulated to reproduce tissue which will replace that already dissipated by the distension of the periodontal membrane and the formation of an abscess. These camphors are non-irritant disinfectants.

To introduce a powerful escharotic or coagulator of albumen in the treatment of a cold abscess, not providing for drainage, would be most disastrous, and would generally lead to the formation of an acute abscess. It were far better practice to cut through the gum and alveolar process and provide an outlet at once than to attempt such a practice. The accidental forcing through the apex of a root, of any septic matter, is always to be avoided, and even the greatest care exercised by the immediate and indiscriminate root-fillers is not sufficient to prevent much suffering and the occasional loss of a valuable tooth from inadequate disinfection. Time is always a factor in the destruction of microbes and their spores, and the disinfection of infective dentine is a matter of no small importance when it is hoped, by filling a root, that the operation will prove permanently successful. The future welfare of the cementum and pericementum is largely dependent on complete disinfection of the dentine prior to root-filling. The practice of leaving antiseptics and disinfectants within the root canal or pulp chamber as a safeguard against future trouble is delusive and is not founded on a knowledge of their potency in such situations.

Fistulæ.—When a fistulous tract leads from the apex of a root to the gum or elsewhere, cleansing the canal of *debris*, disinfection of the dentine, and injection or pumping through the canal and fistula of eugenol, terebene, or five per cent. carbolic acid, and immediate root-filling, is generally permissable. When there are complications of caries or necrosis of the alveolar plate, surgical interference is required. In some cases of cold abscess, and more frequently when there is an open fistula, small blackish nodular deposits may be found around the apices of the affected roots, which it is needless to observe should be removed before the abscess will heal.

Class Three. Treatment: the same as for Class Two.

Class Four. In very many cases of pulpless teeth, from gradual exposure and death of the pulp, we find either encystment or cold abscess; more frequently the later. This has already been sufficiently described in detail. When the pulp dies from mechanical abrasion or some form of erosion, we have been surprised to find that in nearly every instance the apices of the roots have been encysted, and such teeth in consequence are fit subjects for immediate root-filling when thoroughly disinfected.

Class Five. In the treatment of this class of pulpless teeth, when it is thought desirable to retain them in the mouth I have found that immediate root-filling is not to be practiced with impunity. The periodontal membrane, remaining on the cementum, detached, or with only a loose hold upon it, is so feebly vital that the most careful stimulation and the retention of temporary dressings in the canals until the fistulæ have healed from the bottom outwards is most productive of good results. My usual practice is to remove *debris* and the pulp, cleansing the canals, as in Class One, then pack the roots tightly with threads of cotton wool, saturated with

R.—Ol. Cinnamom. ... ... m. xx,
Ol. Gaultheria, Terebene... ... aa m. xxx,

and seal the crown cavity with hard gutta-percha. This dressing is generally allowed to remain from one to six months, when the root is filled permanently.

Class Six. In the management of this class of cases circumstances generally point to the necessity for temporary root dressings in order to prevent pain and swelling of the face. Whenever any uncertainty exists in the mind of the operator about the possible outcome of the hasty filling of a root, the interest of your client and sound judgment will dictate the course to pursue, which may, and probably will be, the temporary dressing with a perforated gutta-percha covering. In the consideration of the various classes of pulpless teeth as they are met with in daily practice, I am not unmindful of possible complications; very many cases, indeed, are not seen by the surgeon until pain has driven the patient to him for aid. Certain relief is always afforded by drilling directly into the pulp chamber, supporting the tooth with the fingers, or producing torsion with a ligature held in the hand of an assistant. This operation is always to be preferred to drilling. Through the process, unless the patient has great fortitude, it is convenient to apply a local anæsthetic. If the swelling is great and the abscess can be reached conveniently with a bistoury, that operation will be indicated. After entering the pulp chamber, and gently removing the remains of the pulp, under antiseptic precautions, very great comfort may be assured the patient by painting the dried gum with equal parts of chloroform, tincture of aconite root, and tincture of iodine, and the immediate administration of $\frac{1}{10}$ gr. pills of calcium sulphide every fifteen minutes until four or six have been taken, or thirty drop doses in water of fluid extract of Tonga every fifteen minutes. The drill hole should be stopped very loosely with iodoform cotton or cotton moistened with an essential oil, for two days, when all soreness will have disappeared and the root may be cleansed and dressed as mentioned in the consideration of Class Two, under the sub-heading of cold abscess. Occasionally pulpless teeth are elongated, and when the jaws are closed, pain is produced. This can be obviated by grinding the points or cusps of the molars and bicuspids, or other occluding surfaces.

I have no desire to lengthen this already long paper, but may I be permitted to observe that much of the success in the management of pulpless teeth is due to the thorough removal of all pulp tissue and other foreign matters, and the fidelity of filling the roots with a substance not porous or corruptible by the fluids of the mouth, or the products of microbes, and free from intermixed antiseptics? No dependence is to be placed in the permanency of incorporated antiseptics in root-fillings. I believe it to be a mistaken idea that only the apex is to be scaled, and would regard it as a step in advance, if all surgeons would abandon the stopping of roots with cotton wool, silk, or other vegetable fibre saturated with antiseptics, and adopt either an incorruptible oxychloride, oxyphosphate or gutta-percha as a root-filling. All care and skill exercised in the disinfection of dentine, and the treatment of abscesses goes for nought after the lapse of a few years, when reliance is placed on makeshifts of root-filling materials. Unless the root of a tooth is thoroughly well stopped by the filling, discoloration is not the least disfigurement of the anterior teeth, to say nothing of chronic periodontal inflammation and the establishment of fistulæ and the recurrence of previously cured abscesses, with all the attendant evils and much suffering to the patient.

TEETH EXTRACTED "PROFESSIONALLY."—A novel case of assault had been before the Penarth Magistrates.—Mrs. Jenkins, the wife of a commercial gentleman, charged Mr. Edwin Adley, dentist, with assaulting her, by forcibly taking possession of her teeth. She purchased a set from him some time ago, and deposited one guinea on account. She afterwards declined to pay for them because they did not fit, and the Defendant seizing her, deliberately extracted the teeth from her mouth.—The defence was that the teeth were extracted "professionally."—After a long hearing, during which several musing incidents occurred, the Bench dismissed the case.

British Journal of Dental Science.

LONDON, APRIL 1st, 1888.

THE REGISTRATION OF DENTISTS IN THE COLONIES.

FROM a letter by Mr. Thomson, the Secretary of the Odontological Society of Victoria, we learn that a Dentists' Registration Bill has been passed in Victoria, and a Board appointed by the Governor in Council. It is certainly a matter of congratulation, that a legislative measure has been put upon the statute book, which deals with the question of Dental Registration. There has been so much confusion in the way in which the colonies have been legislated that up to the present it has been a hard matter to determine the legal position of dentists practising in any given colony. Uniformity upon so important a matter as the keeping of an authentic register of persons practising dentistry, seems to us to be absolutely necessary if the regular practioners are to be effectually protected and the Colonial profession purged of the uneducated and unskilled persons who claim to be dentists. Upon the provisions of the Bill now introduced and made law in Victoria, we do not propose to enter, we desire merely to congratulate Victorian dentists upon the acquisition of a bill which we may hope will protect their interests and defend the public from the machinations of unscrupulous charlatans and barber-dentists.

As might be expected much opposition is anticipated from irregular practitioners who seem to believe that they possess a vested interest in dragging down a profession to the level of counter practice and mountebank tooth drawers. The gradual extension of compulsory registration among dentists is in itself an augury of good and may well be taken as giving a brighter outlook for the future. In obtaining a bill compelling Dental Registration, however, Victoria has not by any means settled the difficulty as far as the profession is concerned. As we have learned to our cost over here in England, almost as much depends upon the wise and efficient working of the Act as the Act itself. A Register once formed is by no means a self-regulating piece of mechanism, and it needs the utmost vigilance and assiduous editing to ensure its maintenance in an efficient state. To begin with, the difficulty of excluding from the first Register names of persons who are not really dentists, but who seek registration because "it may be of use hereafter" is very considerable: as we have recently pointed out deaths of registered dentists often occur unnoticed and the names remain upon the Register while the practice is carried on by individuals who personate the dead dentist. We have suffered much from abuses which have in time past crept into our Register, and it is to be feared are still more or less victimised; and so can offer the Colony of Victoria the fruits of our own unhappy experience and trust that hers may be less untoward.

THE MEDICAL, DENTISTS', AND MEDICAL STUDENTS' REGISTERS.—These Registers were published on the 21st inst. and copies may now be had from the Medical Council's publishers. The *Medical Register*, corrected and revised throughout, from all available data, has had prefixed to it some additional preliminary matter of interest, in the form of statistics and tables. From these statistics it appears that, whereas the number registered in 1877 was but 940, the number registered last year was 1531 (showing an increase of 591), while the total number on the *Register* for 1876—the first year in which any such data as are now presented were ascertained—was 22,200, the number on the present Register is 27,246 (showing an increase of 5046) whereof about 66 per cent. were registered in London, 19 in Edinburgh, and 16 in Dublin. The number of pages in the present Register is 1172,—a large increase from the 335 paged volume that sufficed for 1859, the 548 pages for 1870, and the 598 pages for 1876.—The *Medical Students' Register* has prefixed to it similar tables and statistics, showing *inter alia*, for each division of the United Kingdom, the respective numbers registered in 1887 as having passed the several recognised examinations, and the numbers registered at each place of Medical study.—The *Dentists Register* has been subjected to a most thorough and searching investigation, a process already rendered absolutely necessary, owing to gross carelessness or neglect on the part of registered dentists. Soon after Midsummer, Inquiry-Letters under section 12 of the *Dentists' Act* were sent to all persons on the *Register*, and, three months later, nearly a thousand registered *second* Inquiry-Letters had to be sent, as prescribed in the cited section, to those who had not answered the *first* inquiry. By this heavy labour an unprecedented amount of errors has been disclosed and corrected. From the Tables and Statistics confirmed in the preliminary matter of the Register, it appears that the Unqualified Dentists were, in 1879, 4806, or 91 per cent. of the whole, while the Dental Licentiates were 483; but in the present Register the Licentiates have increased to 977, and the Unqualified persons have diminished to 3889, or 79 per cent. of the total, showing already a decrease of 12 per cent.

DENTISTRY IN RUSSIA.—Dr. Soydersky writing to the *Dental Review* says that for a long time dentistry was practiced in Russia principally by foreigners, Germans, English, Americans, and a few native Russians, but the largest number of practitioners were the Jews. Formerly there have been no schools for the education of dentists in Russia, those entering the profession studied three years under the preceptorship of some practitioner, from whom they received a certificate of qualification. The candidate was expected to pass an examination, principally theoretical, confined to the anatomy of the head, chemistry, pathology of the teeth, extraction and materia medica. Through the efforts of the dentists in Russia, a dental college has been established on the plan of those in the United States, and with the sanction of the minister of public instruction. But the regulations are such that the students are not admitted to the practical work until the second year, and thus are deprived of much valuable practical instruction. The school is superintended by a Russian dentist, M. Wazyusky, and it is but just to state that he has done much for dentistry in Russia by his untiring efforts. At present there is no other dental college, but the establishment of a rival is only a question of time, as may be judged from the number of students who come from all parts of Russia, the Caucasus, and even Siberia. The number was as high as 150, at present, the attendance is not quite so large, because the government has prohibited the admission of Jews.

SPASMUS NUTANS IN DENTITION.—Dr. E. Tordons' out-patient class in Brussels has been afforded the opportunity of seeing a case of spasmus nutans, or *tic de salaam*. This is not a very common affection, but several examples are mentioned by Henoch in his Lectures on Children's Diseases. The Brussels case was that of a little girl of ten months, still at the breast. She had been very healthy, and fairly robust. A month previously to her admission the mother had noticed a slight but nearly constant nodding motion of the head. When examined for the first time the chief motion was rotatory ; the eyes also rolled from side to side, especially when the head was held. There were two teeth. The child was treated with oxide of zinc and bromide of potassium. The next time the patient was brought, a fortnight later, but little improvement could be detected, and a nodding motion was added to the lateral oscillation. Afterwards, however, improvement commenced, and at the end of six weeks from the first visit the child was quite well. By that time she had cut two new teeth. There could be little doubt that the affection was a complication, though a rare one, of dentition.

AN AGREEABLY FLAVOURED SALT OF COCAINE.—Dr. Andrew H. Smith, writes to the *New York Medical Record*, "Observing the strong acid property of saccharin, it occurred to me that it could be made to take the place of an acid in combination with the alkaloid cocaine, and thus avoid the extremely bitter and disagreeable taste of the muriate, the salt usually employed. With the aid of Mr. B. Frank Hays, the well-known pharmacist of New York, a salt was obtained which is freely soluble in water, and has an agreeable, sweet, fruity taste—a valuable property when the drug is to be employed in the throat, especially in the case of children. The molecular weight of saccharin (a better name would be saccharinic acid) is 183, that of cocaine 303; combined in these proportions salt is formed having about 80 per cent. of the alkaloidal strength of the muriate, a 5 per cent. solution of the first being equal to a 4 per cent. solution of the second."

THE "DAMNATORY" EFFECT OF ARTIFICIAL TEETH.—A Correspondent favours us with the subjoined cutting which exemplifies that the uses of artificial teeth have a more serious and doctrinal influence, than one at the first blush might suppose. A young country dentist recently had recommended to him as a patient the Bishop of his diocese. His first commission was for a complete set of teeth, and a day was appointed for the prelate to call and fit them in. It was a moment of anxiety—and, indeed, professional importance—to the dentist, as he watched his lordship examining himself and his new teeth in the mirror. Imagine his horror, therefore, when he distinctly caught an expression of a damnatory character ending in "ation" from his client's lips. "I dare say they are a little uncomfortable, my lord," he murmured conciliatingly, "just at first and until you get used to them." "Without doubt he shall perish everlastingly," exclaimed the Bishop, with vehemence. "But indeed, my lord, if you will have patience," pleaded the dentist, "in a week's time" ——"What do you mean?" inquired the prelate, turning round with an apostolic smile. "Why should I not have patience? The teeth fit me beautifully. It is the first time I have found myself able to pronounce the Athanasian Creed with distinctness for twenty years."

A MONK DENTIST.—The correspondent of the *Tablet* in Rome describes the workshop, near the bridge of Quattro Capi, of Fra Orsenico, a monk, "who year after year, standing on the same spot, has grown grey in performing one kind of dreadful service for the poor." There, on the far side of the Tiber, in a little room by the bridge of the Quattro Capi, is a Frate, to be seen any time, who has been there these twenty years doing the same thing day after day for the love of God and his neighbour. Close by the west-end of the old bridge is a large glass door opening into a little room, and above the door is a piece of faded tapestry, upon which, in yellow letters, are worked the words "Fra Orsenico, Dentista." Fra Orsenico is a tall, powerfully-built, gentle-looking man of about fifty, and ever since he was thirty he has, outwardly at least, limited his life to the fulfilment of one corporal work of mercy. From sunrise to sunset he is there at his post ready to pull out the teeth of all who suffer and come to him, and without charge of any kind, except a request for three Hail Mary's. The walls of the room are covered with pious pictures; but it requires an effort to look at them, for the eye is instantly arrested by other objects. Along one side of the room and beneath the table upon which the Frate keeps the tools of his trade are two solid oak chests, without lids, and filled with teeth. Thousands and thousands of teeth of all sizes lie piled up there in those boxes—the results of the Frate's industry. Above the table is a narrow shelf of wood which runs round the room, and upon which are lovingly arranged all sorts of monstrous fangs, stubborn stumps, that it required a very triumph of skill and and strength to extract. Fra Orsenico, who is dressed in the black habit of a Brother of St. John of God, told me in a quiet simple way that he generally pulled out daily about a hundred teeth, and that he had drawn as many as four hundred teeth in a single day. And he has been doing that for twenty years. Then, glancing uneasily at the little mountain of bones with their streaks of dull red beneath the table, I asked the Brother how many teeth he supposed he had extracted from first to last. He smiled slowly and then said, vaguely, "Perhaps millions." I should perhaps have gathered some further particulars about this strange and most devoted man but before I could ask any further questions the door opened, and a feeble poorly dressed woman hobbled in and, without speaking, sat down. One could have hoped that her withered wintry old age would have spared her that sort of trouble; and somehow I had not quite realised what she had come for, when Fra Orsenico asked me if I would like to see the operation—it would be over in a moment. It was meant in all kindness; and I am afraid my leave taking may have seemed a little abrupt. As I hurried across the bridge I saw a sight which seemed like a shadow across the sunshine. A child was being led or rather dragged along, by two people who, from their obvious sense of possession, I knew were her parents. When they had passed I looked back; and they too were going to Fra Orsenico. It is probably not necessary to add that the Frate's methods are very simple. A tooth that is drawn can never ache again, and anæsthetics are very costly, and require a great deal more time than the Frate has got to give.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

AMALGAMS AND ALLOYS.

By C. P. Pruyn, M.D., D.D.S., Chicago, Ill.

Alloys having mercury as a constituent are called amalgams.

The wedgwood mortar is the best, but it is made too large for our use, and it is desirable that the makers should supply us with one of the proper size for dental purposes.

The next best are glass mortars sold by all dental supply houses ; but they are too smooth to properly retain the particles while the pestle is passing over them, unless you have powdered emery worked in them for some time, to destroy the glaze ; or a quicker way is to roughen the inside with a rounded engine corundum wheel, when it will do very well, but even then it is inferior to the wedgwood mortar.

The details of the preparation and manipulation of amalgams, and the preparation of cavities for the reception of the same, have such a bearing upon the ultimate result that deems it advisable to devote a considerable amount of space to it.

A very large percentage of the curses that have been hurled at amalgam *per se*, should have been given to the men who so carelessly have used it. He believes that it requires just as much care to insert an amalgam filling properly as it does gold.

Some one will say " it takes too much time to operate in that manner, my patients will not appreciate it and those who will not appreciate it will not pay for such an expenditure of time no a cheap amalgam filling, and I cannot afford to work for nothing." A great mistake is made in teaching and allowing your patients to think it a cheap poor material, for time has abundantly proven that where it has been properly used, it has preserved the teeth nearly, or quite as well as gold.

If you consume two hours in inserting an amalgam filling it is your duty to yourself to charge very nearly as much as if you consumed the same time upon gold ; this is the practice that I am trying to pursue, and I experience but very little trouble in so doing.

While he does not believe the rash statement of the " New Departure" triumvirate, " That as teeth need saving gold is the worst material to use" ; he does not believe that as teeth need saving is amalgam the worst material to use ; but each of these material has its use in dentistry ; and the man who never uses amalgam in the preservation of teeth is not doing his patients the best service ; for there are a great many cases where amalgam is the very best thing to use, and gold would be the worst, and *vice versa.*

A great variety of amalgams are on the market, the oldest of which are composed of silver and tin with a very small amount of copper ; forty parts of silver to sixty of tin is about the usual combination.

The later alloys have the silver and tin in about equal parts, or often the scale is reversed, having silver sixty and tin forty, or thereabouts, which is better ; platinum, gold and zinc are also used in small quantities, with the silver and tin.

The so-called front tooth alloys, or white amalgams, as they are named, have zinc in the mixture, from 0.40 to 7.00. And a little zinc in combination with silver and tin and gold, makes an amalgam that mixes very nicely, and gives it a peculiar, buttery feeling, and it also clings to the pestle in mixing, so that after a little experience in its use. one can discover its presence very readily. Dr. Flagg sees no special good of platinum in an alloy, except to give it a name that sounds well and adds to the expense, although it increases its hardness and rapidity of setting.

Gold, in combination with silver and tin, also increases its hardness and rapidity of setting ; gives good edge-strength, and keeps its colour,

Copper, to a large extent, controls shrinkage, but discolours badly ; nevertheless a copper amalgam, in very soft teeth, will resist further encroachment of decay better than any other material. This is evidenced by the use of Lawrence's old alloy, that is composed of silver and tin, each forty-seven parts, gold one and copper five. Where is there an alloy that has stood the test of time better, and that has preserved more teeth than this old black amalgam ?

There is another alloy that has done good service and kept its colour very well, for years, made by Dr. D. B. Freeman, of Chicago, composed of silver and tin, forty-seven and five-tenths parts each, and gold five, it makes a fine grained alloy, with good edge strength and very little shrinkage, and any one can easily make it.

Fletcher says, do not squeeze out the excess of mercury, but add more of the alloy to take it up; otherwise the amalgam will be injured and you will not get in the amalgam, what you expected to get from the alloy; and Dr. Pruyn's own experience corroborates that of Mr. Fletcher.

He insists upon the dry mixing, that is, have only enough mercury to unite the particles of alloy into one mass after thorough trituration in the mortar; so that it will require considerable tapping and pressure to get it well into the anchorage of the cavity, when enough moisture will be evolved to make a solid filling, thoroughly united throughout its whole extent.

Contouring may be done with it just as well as with gold; of course in the above, the writer refers especially to the bicuspids and molars.

Now the question arises; shall we ever use amalgam and gold in the same tooth, and if so, why? and if not, why not? There has been such varied teaching in the past, in regard to this subject, that it is time the old errors should be exploded and scientific teaching presented to our students of to-day. The old way was to put both amalgam and gold in the same tooth if it seemed necessary, but never let them touch each other, or grave results would follow. After seeing such methods pursued for a term of years, we find that in spite of the teachings, grave results did follow, which ultimately resulted in the loss of the gold filling, while the amalgam remained comparatively sound, or rather, the tooth structure surrounding the amalgam filling.

Therefore we found, first from an unpleasant experience, and later from theory, that if amalgam and gold are placed in the same tooth, they should have an uninterrupted communication, should be in complete apposition, so that no electric or galvanic action can take place,—because they touch each other.

We have found that if the two metals touch in the electric battery, there is no longer a current, it is dead, no shock is produced, and it is just the same when the metals are in a tooth in the presence of an acid, as it is out of the mouth, in the laboratory.

Having learned this simple lesson in Electrical Chemistry, we find that we can make use of it very often in our work upon the human teeth. To cite a case. A patient is seen with a mouth full of gold, as we often say when meaning that there are a number of large gold fillings. Upper molars nicely filled, lower second molar has lost a large gold filling, buccal-mesial and distal walls are broken down; patient cannot bear the physical or financial strain to refill with gold, and indeed, you do not think it would pay to put your patient to such an ordeal when the chances of further failure are so great. So you fill with amalgam at a venture, and when the rubber dam is removed and the acid saliva comes in contact with the teeth as they are closed, a very perceptible shock is manifest, and you dry off the newly filled tooth, put on a coating of Chloro-Percha or some other impervious varnish to protect temporarily and save further shock. Then the next day, or very soon thereafter, you drill into the amalgam filling and insert in the cavity thus made, a gold filling, when all goes well. And why? because you have removed the cause of trouble, or rendered inert the metals which caused the electricity to be generated; and such a tooth, filled in such a manner, will resist the further encroachment of caries better than if filled with gold; but the amalgam will discolour badly, while the gold will remain bright and clear.

Enough attention to the preparation of the cavities for amalgam has not been given in the past.

In a conversation with one of the oldest teachers in one of the dental schools of this country, recently, he said to me, "I don't say much to the boys about amalgam; I just teach them how to use gold, and then they will be able to use amalgam properly." This the writer considers a fallacy.

For gold is the only metal that we use in filling teeth that can be left with an attenuated edge, and if we put amalgam into a cavity that has been prepared for gold, as we usually prepare such cavities, the result will be crevicing at the margin, and further decay. Therefore, with amalgam no attenuated edges, but good, sharp, well defined borders.

The systemic mercurialization that has been attributed to the mercury in amalgam fillings has existed, He thinks, very largely in the minds of the anti-amalgamists, rather than in the systems of their patients.

Although there are doubtless a very few persons who have a constitutional idiosyncrasy predisposing to mercurialization, and a very minute portion of mercury in any form might produce ptyalism, or any of the other forms of mercurial poisoning under such circumstances, but fortunately such people are seldom met with in a dental practice.

As is very well known there are some persons who are systematically antagonistic to the use of arsenic, strychnine, opium, rhubarb, ipecac, &c.; but for this reason shall we abandon these valuable drugs? And for the same reason shall we abandon the use of amalgams? Even though it has been conclusively proven that an amalgam filling of the size of a small split pea, that had done good service in the mouth somewhere from five to forty years, still had enough mercury in it that was given off by volatilization to kill an insect that was placed in the same test tube with it, and then deprived of all food and drink.

He wishes to be clearly understood in regard to this matter of mercurial poisoning; and further says that mercurialization from the effects of the volatilization of the mercury in an amalgam filling, while it is possible and also probable, is very rarely found. Some of the older men of the profession who have a large practice and experience, can doubtless refer to a few cases that they have met with; and it may be possible that a few of the more observing young men may be able to report a very few cases, but he believes they are rarely found.

He has in his possession a literary curiosity in the shape of an appointment card which states in plain words *no gold used*, and the author of the same is said to be J. Foster Flagg, of Philadelphia, who uses pounds of amalgam where many use ounces; he states positively that systemic effects from the mercury in amalgam fillings is something that he seldom sees, although he reports a few marked cases that have occurred in his practice.

DENTAL COSMOS.

UNUSUAL BRIDGE-WORK.

By R. Walter Starr, D.D.S., Philadelphia, Pa.

A gentleman, 80, presented himself for an examination of his teeth and mouth, which were found in a deplorable condition. For the upper jaw, nothing seemed practicable but extraction, to this the patient was most averse.

A piece of bridge-work had been some months previously mounted upon the excised superior right lateral, left central, and right and left cuspids. The bridge had been imperfectly constructed, and the posts set in amalgam. It was so loose as to move with the lips, and was retained within the mouth solely by divergent posts in the roots. Both cuspid roots were also loosened. The bridge was removed, and the mass of underlying filth washed away.

A slight pressure caused pus to flow from sinuses opening half an inch or more above the necks of all the roots on both their palatal and labial aspects. Syringing the roots and sinuses with diluted aromatic sulphuric acid was first employed then in half an hour a week solution of carbolic acid and Listerine was used. This was repeated daily, varied by the occasional employment of tincture of iodine on the surface and in the roots.

The left cuspid was nearly equally divided throughout. The parts being first bound tightly with fine wire; holes were drilled obliquely in the root-end from one part into the other, the holes were tapped with anchor tap No. 5, a piece of anchor screw wire turned into the bottom of each hole, and then cut off flush with the root-end. The wire ferrule was replaced by a tight-fitting gold collar, and the further treatment and preparation of the root completed.

The right cuspid was split into three pieces. The mesial portion was obliquely split off, and was almost a sequestrum having been so long bathed in pus it was therefore removed. Its cemental surface was then pressed into moldine, a fusible metal die made, and a corresponding piece of thin pure gold struck up. To the concave surface of this plate two headed platinum pins (taken from broken porcelain teeth) were soldered.

The inferior of the root was then suitably under-cut with engine-burs, the gold plate put in the place of the extracted root-piece, and bound firmly in position relative to the remaining root fragments by fine binding wire, as in the case of the other split cuspid. Dry amalgam was then packed into the root and around the plate-pins. At the next sitting the wire ferrule was removed, and a gold collar fitted tight around the splint and root, which was then drilled to receive a suitable crown-post.

The fitting of the lateral and central with caps and posts and the fitting of telescoping caps over the collars of the cuspids were done as usual, and short saddles of gold plate were struck up to rest on the ridges of the gums behind the cuspids for the support of two plate bicuspids on each side.

The lower centrals, laterals, and cuspids had been worn down nearly to the gum ; the bicuspids were all present, and the right second bicuspid in good condition, but the others were ground more than half away. The right second molar stood in the place of the first molar, and was so displaced as to expose the bifurcation of its roots. The right third molar lay upon its mesial side. Both these molars had been filled and preserved. The left second molar occupied the place of the first molar, and had but its distal wall remaining. The third molar had a large crown filling, and was well preserved. The treatment of the bicuspid roots and left second molar had been carried on simultaneously with that of the roots in the upper jaw, with a satisfactory result.

The left lower molar was contoured with gold, and gold cap-crowns set on all the bicuspid roots. Gold caps were fitted on the worn crowns of the lower cuspids, laterals, and centrals, and a porcelain-faced bridge constructed by uniting the backings and caps. Posts were employed only in the cuspids, (the other teeth being alive), and the caps fitted so closely that the merest film of cement sufficed to hold each cap in place, and make the bridge thus organized a very firm structure.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, Held Feb. 6th, 1888.
MR. S. J. HUTCHINSON, M.R.C.S., L.D.S,
Vice-President, in the Chair.

Discussion upon Dr. Harlan's Paper on "Pulpless Teeth."

(*Concluded from page* 289.)

THE Chairman said that Dr. Harlan had brought forward the subject in so masterly a way that he felt sure all would congratulate him. At the same time he was assured the matter would commend itself to much comment and criticism from many af the members present. and so he (the Chairman) would suggest that the discussion should be opened at once, that no valuable time should be lost, especially as but a brief interval existed before the meeting would have to close.

Dr. Mitchell strongly sympathized with that portion of the paper which insisted upon the importance of cleanliness, as he regarded this as being one of the chief factors in arriving at success. Referring to the practice of filling teeth with cotton soaked in antiseptic substances, he said he had known of some cases in which it had become necessary to refill such teeth, and the offensive odour emitted from the removed dressing was so bad as to prove beyond question the impropriety of such a practice.

Dr. St. George Elliott showed and described a combined syringe and washing apparatus for treating and washing out dead teeth. It was made with a spring, and was fitted with an ordinary nozzle for ordinary purposes and two platina ones. By means of this syringe it was possible to pass water backwards and forward in the nerve canal until it was thoroughly cleansed. There was also a finer nozzle which could be passed two-thirds of the way up the canal, and which enabled the operator to completely remove *debris*. He did not see why it was not possible to carry out Rosenthal's method and introduce gutta-percha up the canal so that it might do its own filling.

Mr. C. S. Tomes felt that in their daily practice in dealing with a septic condition of the teeth they were in some danger of losing sight of the usual conditions with which they had to deal. He was by no means sure that Dr. Harlan, in his free use of antiseptics, had not once or twice done so. In the first place, in working in the mouth the fulfilment of any true antiseptic code was impossible. Thus they were told to use sterilised instruments, but if any one hoped to puncture with an antiseptic, let him try how far an ordinary instrument would pierce into the dentine, and it would soon be seen how very little headway a chemical agent would make. Dr. Harlan had mentioned a series of precautions in cleansing the pulp cavity, then he put in the stopping and covered it with gutta-percha in which he punctured holes, thereby stultifying his assumption that all putrid material had been removed. He (Mr. Tomes) thought that in treating such a tooth they would do well to dismiss from their minds the idea that it was possible to attain a perfectly aseptic condition. He wished simply to sound a note of warning that they should not talk about a something to which it was impossible to attain, and lose sight of more practical considerations which would lead to practical success.

Dr. Field had in his own practice found the methods advocated by Dr. Harlan answered very well. He had, however, met with occasional failures, for which he could not account. They revealed themselves sometimes in three months, sometimes in three years. He believed that it was occasionally impossible to asepticise the cavities. Success he believed depended in great measure upon delicacy of touch, ensuring that the fine-pointed instruments employed should not enter beyond the apex of the root. With respect to the old method, he felt bound to state that he had seen the roots of teeth filled with only cotton wool, steeped in creosote, which had stood for years. So that although aseptic conditions had not been attained, the closure of the apical foramen had been effectual. He believed the success of the operation depended very largely upon the strict observance of details, and this was controlled by the individual operator. There were a large number of different fillings employed, but success might follow the use of any of them if they were perfectly employed.

Dr. Walker said it would, perhaps, afford the Society some pleasure to be reminded that the subject under discussion was no new thing to the members, for as far back as 1865 their then President and present Treasurer, Mr. Thomas Arnold Rogers, who was sitting beside him that evening, had read a paper upon this very subject. Any member interested in the matter could, by turning to the volume of the Transactions for 1865, read it for himself. Mr. Rogers in his paper gave a long account of how he filled and treated roots, and exhibited the instruments he had used, at the same time stating the results of his treatment. Dr. Walker had had the pleasure of co-operating with him at that time, and had only recently seen a canine plugged by him in 1871 by the method advocated in 1865, and found it still in a satisfactory condition. He had followed out the method of filling with metal right up to the apex of the root, instead of with cotton, and he fully coincided with Dr. Harlan that if sound roots were filled to the apex with metal, good results would be obtained. He had seen Dr. Harlan's work in Chicago, and had been much struck by the very great care he exercised, especially in preventing moisture returning to the roots after treatment. There was one point upon which Dr. Harlan had not enlightened them, and that was how he treated the twisted palatine roots of molars. He (Dr. Walker) was free to confess that in treating this class of cases he had met with failure after failure. He was, or tried to be, a patient operator, but he had had his patience severely put to the test. He had learned a good deal from Mr. Hern's paper upon the subject, and Mr. Hern had showed him some beautiful specimens of roots prepared by freely opening up the mouths of the roots of first and second molars. He believed Mr. Hern was right in insisting upon the importance of obtaining a free access to root canals by drilling and reaming.

Mr. Thomas Arnold Rogers said he had not intended taking any part in the discussion, because in the first place he was afflicted with deafness, the result of illness, which prevented him from following the reader of the paper closely, and because he had considered himself as becoming somewhat old-fashioned in his views, for he had retired from practice for some eighteen years. Speaking from memory he believed he was right in saying that the paper to which Dr. Walker had referred to dealt with the destruction of exposed and diseased but yet living pulps and filling the teeth at once. He would not detain the Society with any lengthy remarks, but would simply say that, as he stated in his paper, he still believed that it was best to fill immediately before deleterious matter could reach the fangs, and it was best to fill with some solid permanent material, preferably gold, and to avoid temporary antiseptised substance such as cotton wool.

The chairman said the usual time for closing the discussion having arrived, it was his duty to put it to the meeting whether a prolongation should be made or the discussion adjourned. It was then decided to continue the discussion, and the Chairman pointed out that as their time was short it would be advisable to restrict the discussion to three headings—1st, Treatment of teeth the pulp of which had been immediately destroyed; 2nd, of teeth the pulps of which were dead before they had come to the operator; and 3rd, teeth the pulps of which were dead, and open sinuses existed.

Mr. Hern then continued the discussion, and said he had proposed to himself to offer some such a division of the subject as the Chairman had suggested. He thought two headings would really well include all cases, viz.: (1) Pulps devitalised by the operator, and (2) Pulps which had died and had undergone putrefactien. The treatment of the two classes of cures would, he thought, differ very widely. In class 1 there was no dead pulp, and no disinfection or deodorisation was necessary, and so the treatment required was of the simplest description. He was sorry to hear Dr. Harlan say he did not ream or drill his roots. Unless this was done it was impossible to remove the dead and diseased tissue. It was essential to gain access to the canals and pulp cavities, and this could only be done by (1) opening the pulp cavity in as straight a line as possible with the axis, and (2) by enlarging the orifice of the root canals, and (3) using a rotating drill. In a paper he had had the privilege to read before the Society some short time back, he had stated that in dividing the roots up, the nearer the operator was able to get to the apex of the root the more sure he would be of removing the bulk of the pulp tissue and of carrying antiseptics to the point from which troubles usually took their origin. With regard to antiseptics, Dr. Harlan had, in his opinion, gone back to rather feeble antiseptics in the essential oils. There was a mutual repulsion between the watery condition of the pulp canals and an essential oil, and on that account these oils did not seem to him to be reliable as antiseptics. In iodoform they possessed a better antiseptic, although he confessed it had some disagreeable properties, among which might be mentioned its very pungent odour. Recently he had been employing glycerine and carbolic acid, while drying the cavity as far as possible, then using iodoform in absolute alcohol. This in experience penetrated far better than an essential oil. One other point he desired to bring forward, and that was, that in drilling and reaming root canals, the use of a rotating drill enabled the operator to cut away the immeate circumference of the pulp cavities and remove much of the septic accumulation.

Dr. George Cunningham thought Dr. Harlan's paper merited the fullest answer that could be given to it. The position of those who filled upon an antiseptic appeared to him to have been shaken. It was impossible at that late hour to enter upon anything like an exhaustive criticism upon what had been said with regard to immediate root-filling, but he hoped to be able at a subsequent time to bring forward important statistics upon this subject. Dr. Harlan's mention of such medicines as calcium sulphide, aconite, and iodine showed that he also needed such valuable adjuncts in his practice. He (Dr. Cunningham) believed that the best antiseptics were good nerve broaches and nerve drills. He felt able to follow Dr. Harlan in his stricture upon the practice of condensing vegetable substances such as cotton in root canals. Metal fillings were, he believed, the best, although he could say nothing against oxychloride and oxyphosphates, since they were very convenient materials, and gave good results, and were in some cases more manageable. With regard to the use of wooden points for destroying pulps, which had been stigmatised by Dr. Harlan as a barbarous practice, he thought the procedure was permissable in certain cases, provided the operator in making the excision made the return blow *immediately*. He had used the wooden point in his own practice in cases which seemed to warrant it, and without any acute pain to his patients, by simply observing what he considered the essential condition to success, viz., making the excision and return blow as nearly as possible synchronous. In conclusion, he would say that unlike Dr. Harlan, he had many patients who were birds of passage, and he should be very grateful, should they come under the care of any of his professional brethren in America, if they would let him hear of any faulty fillings due to him, for he believed the knowlege of failure was often the stepping stone to success.

Dr. Field desired to be allowed one word in explanation. He feared he had left the impression upon the minds of many that he still pursued the old method, but as a matter of fact he followed the plan which Dr. Harlan had described, except that he usually filled the root canals with gutta-percha.

Mr. Betts drew attention to a little practical point. In using the drill even with the utmost care and dexterity there was a liability for the head to come off and be left firmly fixed in the canal; he would therefore, in view of this possible occurrence, suggest that an antiseptic should be introduced before the drill was applied.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, held March 12th, 1888.
W. HERN, ESQ., *President*, in the Chair.

THE minutes of the previous Meeting were read and confirmed.

Mr. J. C. Rogers was proposed for membership by Mr. Seymour, seconded by Mr. Washbourn.

Mr. W. R. Barrett was proposed by Mr. Spray, seconded by Mr. Rilot.

On Casual Communications being called, Mr. Rilot presented, for Mr. C. A. Barstow of Harrogate,

(1.) A model showing transposition of an upper first bicuspid and canine.
(2.) A lower canine with two well-marked roots.

Mr. G. Seymour, for Messrs. Segg & Co., presented a book to the Library, entitled "Illustrated Complete Guide to London."

The President spoke of the importance of early operative measures in cases of suppurative inflammation about the lower wisdom teeth, and pointed out the tendency of the pus to gravitate beneath the cervical fascia, if the treatment within the mouth were delayed, and thus necessitating an external opening in the neck before a cure could be effected.

He emphasized his remarks by referring to two cases which had been under his treatment in the Middlesex Hospital.

In the first, a suppurative inflammation about the *right lower* wisdom tooth resulted in a fluctuating swelling below the angle of the jaw, which required an external opening in the neck for its cure, notwithstanding the removal of the offending member. Whilst the patient was in the Hospital undergoing treatment for this, he was attacked with a suppurative periostitis about the *left* second molar and wisdom teeth, accompanied by considerable swelling and stiffness about the angle of the jaw; these latter symptoms, however, quickly subsided after the timely extraction of the second lower molar.

In the second case, in which the patient had delayed seeking advice for several days after suppuration had taken place, although the offending lower wisdom tooth was at once removed, and a large quantity of pus evacuated through its socket, yet a second and dependent external opening below the angle of the jaw became necessary.

The President then called on Mr. Frederick Todd for his paper on "Extraction and its Complications." [see p. 313.|

In the discussion which was opened by the President,

Mr. Bates thought Mr. Todd had overrated the tendency for necrosis, to occur after fracture of the alveolar wall, and considered that the vascularity of the parts concerned was an important aid to a speedy recovery, and not in any way calculated to give rise to further trouble. He deprecated the use of Tinct. ferri perchlor. in the treatment of Hæmorrhage, and narrated a case of epilepsy occurring after the extraction of an upper bicuspid.

Mr. G. Seymour spoke on the treatment of hæmorrhage, he advocated plugging the socket with wool dipped in Styptic Colloid, and mentioned two cases in which he had found it necessary to insert a tray filled with soft stents, which was left in position for two days. He also spoke of matico leaves, and the way in which they served to arrest hæmorrhage. He deprecated the use of sharp-pointed probes, especially double-ended ones, in searching for exposed pulps, and thought that the frequency of the occurrence of dislocation during extraction had been greatly overrated.

Mr. Harsant thought that laceration of the gum occurred most frequently in connection with the extraction of lower wisdom teeth, and pointed out the method of using the elevator, so as to avoid wounding the neighbouring soft structures.

Mr. Colyer spoke as to the necessity for careful and thorough examination before attempting to extract fractured teeth, and advocated the more frequent use of the elevator, especially for lower wisdom teeth. He regretted that Mr. Todd had not dealt with the subject of inflammation of the socket following extraction, and spoke as to the value of Phenol Sodique in such cases. In the treatment of hæmorrhage he had always used Tannic Acid, and with great success; if hot water were employed he thought the temperature should be at least 140 deg. and not 110 deg. as described by Mr. Todd.

Mr. MacDonald narrated the history of the case mentioned by Mr. Todd in which an upper bicuspid was forced into the antrum in the attempt to extract. It was afterwards removed, and the case did well.

Mr. E. Lloyd Williams advocated the more frequent use of straight instead of hawk's bill forceps. He called the attention of the members to the fact that in nearly every case the inner alveolar wall is thinner than the outer, and hence extraction in an inward direction is less resisted than the ordinary outward movement.

He spoke about the swelling of the lips that so often occurs after extraction, and ascribed it, not as is usually done to the clumsy operation, but to a reflex nervous irritation causing congestion and local hyperæmia. He emphasized in conclusion the absolute necessity of cleanliness and antiseptic precautions.

Mr. Todd briefly replied to the various speakers.

The President then proposed the usual vote of thanks to Mr. Todd for his paper, and to Messrs. Barstow and Seymour for their Casual Communications.

He then announced the next meeting would take place on Monday, May 14th, when Mr. J. Mountford would read a paper on "Diseases of the Pulp and their Treatment."

The meeting was then adjourned.

Dental News.

THE DENTAL HOSPITAL OF LONDON.

The 30th Annual Meeting of this Institution was held at the Hospital Leicester Square, last evening, under the presidency of Thomas Arnold Rogers, Esq., one of the Vice-Presidents. In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success and prosperity of the Institution; also on the great benefits which the Hospital continues to afford to the suffering poor, 47,441 cases having been treated during the year 1887, a large number of them painlessly (under anæsthetics), being 3,696 in excess of those of the previous year, and 15,537 in excess of the number treated in 1874, when the Hospital was removed to its present site. That it had been found absolutely necessary, in consequence of the continued increase in the number of patients, to further enlarge the Hospital by the purchase of the adjoining house for £3,500, which necessitated increasing the mortgage debt on the Hospital to £5,500. That a special appeal had been issued for the funds necessary for filling up and adapting the new wing, and for redeeming the mortgage debt of £5,500 on the Hospital Building, and the Managing Committee gratefully acknowledged £1,949 3s. 6d. in response, including £1,000 from the Medical Staff and Lectures, and £500 from Messrs. Claudius Ash and Sons. That there is still a deficit of £5,700 in the Extension Account, and the Committee are compelled to make a further special appeal for the funds necessary to pay off this debt which presses so heavily upon the charity, and materially curtails the benefits it would otherwise be enabled to confer upon the suffering poor. Help by an increase of annual subscriptions is also earnestly solicited. The Charity is unendowed and increased funds would enable it to greatly extend its usefulness.

ODONTOLOGICAL SOCIETY, APRIL 9th, 1888.

Papers :—"On some practical points, in relation to the Physiology and Pathology of this 5th pair of nerves," by Stretch Dowse, M.D.

"A statistical enquiry as to the results of the Immediate treatment of Pulpless and abscessed teeth." By Geo. Cunningham, B.A., Cam., D.M.D., Harvard.

Casual—By Dr. Campbell, D.D.S.

C. J. BOYD WALLIS:—*Hon. Sec.*

APPOINTMENTS.

Mr. Henry C. Carter, L.D.S., has been appointed, Hon. Dental Surgeon, to the "Marie Stuart Home" for Girls, Paddington, W.

VACANCY.

Victoria Dental Hospital, Manchester. The post of House Dental Surgeon will be vacant in a few weeks. Applications before the middle of April to the Secretary.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

POST GRADUATE CLASSES.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I fancy that the "Progressionists" mentioned in your leading article of March 15th, would have been much more numerous, had only the hospital authorities studied their convenience a little, with regard to the hours fixed for clinics; 6.30 or 7 p.m. might have proved tempting, even to some country practitioners.

Yours &c.,

"FESTINA LENTE."

[We have no doubt the question of "Times" has been carefully weighed, but any suggestion such as "Festina Lente's" should be addressed to the Dean of the Hospital, who will, we feel sure, remove all difficulties as far as possible.—Ed. B. J. D. S.]

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I have no doubt you will be pleased to hear that a Dentists' Registration Bill has been passed in Victoria, a copy of which I am forwarding to you.

The Board has just been appointed by the Governor in Council as follows, viz.:—

T. M. Girdlestone, F.R.C.S.E., *President of Medical Society;* Dr. Thos. Rowan, F.R.C.S.E., *President of the British Medical Association;* J. P. Ryan, L.K.Q.C.P., L.R.C.S.I.; L. A. Carter, D.D.S., Philadelphia; Thos. Muridge, D.D.S.; F. A. Kernot, Esq.; George Thomson, L.D.S., Eng.

The chemists are a powerful body here, and we expect to have some trouble with them. With compliments,

I am, Yours sincerely,
GEORGE THOMSON,
Collins Street East, Melbourne.

Feb. 8th, 1888.

Hospital Reports.

Monthly Statement of operations performed at the London Dental Hospital, Great Portland Street, W., from Feb. 1st to Feb. 29th 1888:—

Number of patients attended		1804
Extractions	Children under 14	224
	Adults	450
	Under Nitrous Oxide	620
Gold Stoppings		126
Other Stoppings		558
Advice and Scaling		260
Irregularities of the Teeth		134
Miscellaneous and Dressings		245
	Total	2167

Frank Lankester, L.R.C.P., M.R.C.S., L.D.S., *House Surgeon.*

BOOKS AND JOURNALS RECEIVED—

British Medical Journal; Chemist and Druggist; Journal of British Dental Association; Items of Interest; Revue Odontologique; Glasgow Medical Journal; Southern Dental Journal; Dental Advertiser; Journal f. Zahuhelkunde; Annual Report Dental Hospital; Dental Review; The Dental Register 1888; Aids to Dental Surgery, by Arthur S. Underwood, M.R.C.S., L.D.S., Baltiere Tyndall & Co., London.

Communications have been received from:—

The Secretary of the London Dental Hospital; Register of the General Medical Council; Mr. Seymour, London; Mr. Todd, London; Mr. Lankester, London; Mr. Pink, London; Mr. Ellwood, Redhill; Mr. Carter, London; Mr. Thomson Melbourne.

British Journal of Dental Science.

No. 486. LONDON, APRIL 15, 1888. Vol. XXXI.

THE PRESIDENT'S INAUGURAL ADDRESS.

Delivered before the Odontological Society of Great Britain.

Many, many years ago I listened to an eloquent divine describe Sunrise over an Eastern City; at the sable margin of the far-spent night he drew our attention to a brown line gradually expanding, and developing into a brilliancy of colour, sufficient to tinge the circumambient atmosphere with the light of dawn; scintillating rays shot upwards, gilding the tops of each tower and minaret, until at last the glorious orb appeared, its first horizontal beam revealing the outline and form of a solitary wayfarer on the deserted path. Of his fascinated audience, he asked the question: Whither is he bent, and what to see? I borrow the metaphor to suit my purpose now, and ask myself the question, Why I am here, and for what purpose? Gentlemen, I am here to acknowledge gratefully the high and undeserved compliment my professional brethren have conferred. From that dizzy height to which you have raised me, I look around, and, yielding to my tempter, confess I feel proud of my position, as President of a Society, European in its celebrity.

As a counteractive to my pride, I must acknowledge a feeling of humility, and, in the consciousness of my own undeservedness, consent to appear great by a reflected light. To you, active members of the Odontological Society, belongs the honour of which I am only the custodian during my year of office. It is now vain for me to express my regret at the little I have done to help you, in your efforts, through osteological and microscopical research to unravel the mysteries of our scientific calling, and elevate the profession of dentist to its present proud status; my regret is still further intensified when I regard my advanced period of life, and the short time allowed me to make even a late effort to add one link to that long chain of scientific discovery, the outcome of your labours, and which I recognise in the Library and Museum of the Odontological Society of Great Britain.

Regarding myself as the Nestor of our profession—having been engaged in active practice for more than fifty years—I appear before you this evening, and whilst acknowledging the profit and advantage your labours have been to me, through the perusal of our Transactions, I am loth to confess, but little of the "midnight oil" did I consume in adding to our stock of information. The exhausting nature of our avocations, as you can readily understand, left me, at the close of the day, totally unfit to engage in brain work; like a drone in the hive I was content to sip the honey of your persevering industry, and day after day apply its essence to my own advantage. However, while making this confession, I can fairly claim to have on many occasions given proof that I had at heart the advancement of our calling. From the commencement of the movement which seems now certain to create such a favourable revolution in the required education and improved professional position of the dentists, I have given an unremitting support to the policy of my friend, Sir John Tomes, and his co-workers. First, by coming over to London, to take out the Diploma in Dental Surgery of the Royal College of Surgeons in England; then, by giving in my adhesion and support to the Dentists' Act, which, with all its shortcomings, unavoidable as these must be in the introduction of a new law, I regard as the one foundation on which we may hope to raise the edifice of a respected profession; and lately, as far as within me lay, the development of the Dental Hospital of Ireland as a charitable and educational institution. During the past ten years I have attended to the administration of this Hospital, on occasions given demonstrations to the students of my own method of practice, and all along by deputy— that is, in the person of my son—have taken my fair share in the training up of the rising generation of dentists. Under these circumstances I hope, I may say, I have moved in harmony with those I have the honour to address to-night.

To the younger members of our profession must we now look for valuable novelty; in their own interest as well as for our edification they should persistently toil. Age will assert its power, and eventually paralyse exertion; still I am convinced that it is, to a certain extent, in every man's power to determine whether he will be old or not. The outward marks of age we are all of us very willing to defer, forgetting that we may wear the inward bloom of youth, with true dignity and grace, and be ready to learn, and eager to give pleasure to others, to a late period of our existence. Now, while I must not forget that I am addressing a Society whose *pabulum vitæ* is, in the main, pure and unalloyed, still I think I may hope for some indulgence from my audience for the egotism of the old man, when I endeavour to add one element, not of exact science, but the fruit of reflection and of a long experience, to this symposium, at which I have the honour to preside.

The question of "Diet" in relation to the growth and development of the teeth has been the frequent theme of essay and discussion, and to a certain extent the subject has been treated from the exact scientific standpoint. Whilst most of the questions that, as far as I can foresee, are likely to arise in connection with our limited specialty, have been investigated very fully and exhaustively, there remains, in my opinion, much to be done by the microscopist, and the chemical analyst in this matter of the influence of diet on the teeth. I cannot, of course, profess to deal with these aspects of the subject in a scientific way, but I have some hope that the general reflections I make on this important matter to-night, may act as an incentive to the accurate scientific explorer in our Society.

If it be the function of the dentist to improve the teeth of the human race from one generation to another, can we, I ask, claim to have succeeded in the slightest degree in this part of our vocation? While we have made advances in every department of operative and mechanical resource, and can do much to repair the ravages of disease, have we done anything worth mentioning to arrest this lamentable deterioration of the teeth; to make them stronger to resist the invasion of caries; to improve and condense their texture; to augment their reparative capabilities? Emphatically, after fifty years' experience, I say, No. From observations on many clients, passing through three generations, I say this deterioration is the almost universal rule.

For this state of things I do not by any means attribute the entire blame to the dentist. Many factors conduce to this result—ignorance, neglect, carelessness about proper sanitary and dietetic measures, the impossibility of having these proper surroundings—contribute to this result, but many of these would vanish if the public would apply vigorously the lessons which the dentist and physician are capable of teaching.

Gradually, I hope, with the improvement of the dentists as a body, in culture and public estimation, will their words of warning and advice sink into the minds of the people at large, especially when these are endorsed and emphasised by the medical attendant, who will have learned to value the opinion of his cultured professional peer, and have recognised that he himself and the dentist have a joint and noble mission to alleviate the sufferings and improve the physical condition of the human race.

It will be convenient to consider three periods during which the influence of "Diet is acting on the development, growth, and health of the teeth."

1st. On the fœtus in utero.
2nd. On the child and youth until the third molars are fully erupted.
3rd. On the adult during the rest of life.

Corresponding to these periods food may be regarded in three different aspects.

1st. The food taken by the mother during pregnancy.
2nd. The food of the child or youth, and possibly by the adult, as a direct nutritive agent to the tooth substance.
3rd. The food of the child, youth, or adult, regarded as a deleterious agent, either by deranging the stomach or by acting directly on the teeth by a chemical or mechanical process.

To consider the nutrition of the teeth of the fœtus, it will be necessary to allude briefly to their early development.

In the opening words of the first chapter of his Essay on the Teeth, Dr. Robert Blake, of Dublin, whose labours have not received the acknowledgment they deserve from authors on this side of the Channel, states that "on examining the jaws of a fœtus about the fourth month after conception, I observed the rudiments of vascular membranes of twelve teeth in each jaw." We may assume, therefore, that at this or even an earlier period of gestation the germs of the teeth are receiving an impress which they will bear ever after. When we remember that the ten anterior germs are to give off the germs of the ten anterior permanent teeth, and that the last fœtal germ on each side is itself to become the first permanent molar, and give off the second and from it the third molar, we must see what a grave issue is involved, as far as the teeth are concerned, at this very early period of pregnancy. At the period of birth the germs of the deciduous teeth have attained pretty nearly the full size that the crowns of these teeth will assume at the time of eruption, and all these germs are more or less calcified.

When we come to the period of the eruption of the teeth, one invariable law applies to them all, namely, that from the moment of their eruption from their membranous capsule into the oral cavity the enamel undergoes no change save the destructive one. The dentine of the crowns and roots, however, for a considerable time after the eruption of the tooth, is capable of inward growth and condensation. The destructive change in the enamel is the result of traumatic action, produced by chemical decomposition or lateral pressure, whereby the crystalline formation of the enamel is destroyed, and rendered permeable to the fluids of the mouth, with results familiar to us all.

I have invariably found greater delicacy of tooth in the upper and middle classes than in the lower, the cause for which I am disposed to refer to more luxurious living. If I ask the mother of a child whose teeth indicate a marked delicacy of constitution, incipient caries exhibiting itself without any recognised cause, How the child was nursed? I am answered with parental confidence, "Nothing was left undone, the child had a splendid nurse, and was fed generously." If I ask the mother relative to her period of pregnancy, I am told, "her appetite was capricious, and anything she felt disposed to take as food was supplied to her." Now to these facts, coupled with the description of food given to the child during its infancy, do I attribute the unusual delicacy of the teeth.

Every mother should bear in mind that there are three conditions essential to the development of the child's tooth.

1st. That the germ of the tooth should be well formed and vigorously ready to assimilate the proper pabulum for its calcification, whether brought to it through the blood-vessels of the mother, or after birth, through the arteries of the child.

2nd. That the chemical elements necessary for tooth calcification should be contained in the food of the mother during pregnancy and lactation, and subsequently should be present in the food of the child.

3rd. That the elements should be present in the food in such combination as to be readily capable of being assimilated.

While accepting the general conclusion of Magitôt and others, that, apart from diet, some races of men are much more prone to dental caries than others, I still consider that much practical advantage is yet to be gained by exhaustive and accurate analyses of the foods and teeth of different races, and also by similar analyses of the food and teeth of the richer and poorer classes inhabiting the same country.

The strongest teeth are to be found in the mouth of the Hindoo, whose principal food is rice. Remarkably strong teeth are also to be found in the mouths of the Scotch and Irish peasantry. The staple food of the former is oatmeal, and of the latter, potatoes.

The most beautiful teeth are to be found in the mouths of our own aristocracy, who eat animal food in large quantities. Caries is much more common in this class than in the three former. Now an accurate chemical analysis and comparison of the teeth of each class would greatly help towards forming our opinion on this question of diet. The teeth should be reduced to their chemical elements, and the relative proportion of earthy salts entering into their composition ascertained. By this minute investigation we might fairly hope to arrive at a knowledge of the type of tooth which is best able to resist, and of that most prone to succumb, to the invasion of decay.

I may be pardoned here if I say, as an Irishman and a dentist, that I view with alarm the large substitution in the food of our poorer people of Indian meal, which is poor, for the potato, which is rich in lime-salts. This substitution may possibly account to some extent for the increase of rickets in some of our larger towns, and will tend, I fear, after a few generations to lower the average of excellence at present to be found in the teeth of my compatriots. But some sceptic may ask with reference to this analysis—to what advantage? I again call your attention to the period of infantile life when the calcification of the temporary teeth is progressing, and the formation of the germs and calcification of the permanent teeth commences, and after a few years is completed. I lay stress again on the fact that, unlike the other dermal appendages, as, for instance, the nails, and unlike most of the other tissues which have an inherent power of shaking off many of the defects of early malnutrition, the teeth have no such power.

A few short years of early childhood will often settle for ever afterwards the quality of the teeth for a whole lifetime. When we consider how a skilful surgeon will treat a case of rickets, how he will introduce in a readily assimilable form, into the food or medicine, the various ingredients calculated to supply the deficient chemical elements, is it not still more necessary, as far as the teeth are concerned, that the most suitable food and medicines should be promptly, skilfully, and patiently administered during the brief period of intra and extra-uterine development, after the close of which all therapeutic measures will be of little avail in improving the quality of the teeth. For my own part, I would rely more on a judicious scale of diet, for chemicalising the blood of the mother or growing child, than on the administration of drugs; though these latter may be of very essential service in invigorating and stimulating those organs of the economy whose function is to absorb the proper pabulum.

When I consider, however, the large quantity of phosphate of lime in casein, in the oatmeal and whole-meal breads, I hardly think we can improve on these as agents for supplying the blood with the proper lime-salts in a readily assimilable form, however we may ransack the British Pharmacopeia. In the case of the pregnant mother, the food should consist of whatever agrees best with her; it may be that her habit will require plenty of animal food. Most of this is rich in the earthly salts. But in early childhood, when the taste for food can be partly formed and cultivated, I would recommend meat to be used sparingly, provided the child can assimilate well, and thrive on milk and vegetable food. However, I touch on this question of therapeusis lightly, meaning rather to indicate the principles which should guide the practitioner in dealing with patients, various in their temperaments and idiosyncracies. I do not intend to dogmatise on the exact period of life during which the teeth are capable of being nourished by the food. There are many indications that the dentine and tooth pulp are susceptible of vital action up to a late period of life, and it is quite possible that this vital action may have a large share, not only in building up a rampart against decay within the pulp cavity, which is admitted by all, but also in keeping strong the natural outwork of dentine and maintaining a condition in the barrier, capable of averting the invasion or retarding the advance of caries.

On the deleterious action of many of the ingesta, I shall not dwell at length. Food and medicine which derange the stomach, which coat the tongue in sympathy with the gastric disturbance, invariably react prejudicially on the teeth. The use of acid drinks and medicines, if preserved in for any length of time, will cause some damage to the dental organs. Thus, I have rarely seen a case where the persistent use of iron in the fluid form did not result in considerable and permanent injury, and this no matter what precautions were adopted—glass tube and rinsing the mouth, &c.

Again fibres of meat or other fermentable matter clogging between or around the teeth are very often the primal cause of caries. The chief remedies on which we rely here will be the use of the toothpick and toothbrush. These therapeutic measures are easily within the reach of all, and we can feel little sympathy for those who suffer from the neglect of them.

But on the skilled medical attendant should rest the responsibility of the proper development of the teeth of the child during its intra-uterine life, and during the early years of childhood as far as it is within the scope of human skill to direct this development to a proper issue.

I say, with regret, that I do not think all medical men pay sufficient heed to this grave matter. Too often do I find that the first visit of a child to my study takes place, about the eighth or ninth year of childhood. The parents have the idea that as the temporary teeth are to be replaced by others, there is no use in attending to the dentistry of the child in early life.

For this ignorance on their part I cannot acquit their medical attendant of blame. If he were as well acquainted with the physiology and pathology of the teeth as he is assumed to be of the other portions of the human frame, this state of things could not exist, and I trust and believe that it is vanishing. Medical men should be encouraged to come to our Dental Hospitals to study accurately these matters, as they elsewhere study the affections of the eye and ear. I think, too, there has been a good deal of distrust, a good deal of mutual jealousy and ill-feeling, but I hope for better things, and believe that in the mutual respect of the doctor and the dentist, in the education of the public through their united efforts, we may hope to introduce a beneficial and generally adopted system of prophylaxis.

But until the doctor is impressed with the importance of these matters, namely, the urgent necessity of administering proper food, the protection of the teeth from damaging drugs, the development of the jaws, by giving them plenty of work, and the irrevocable doom of the teeth, when once the period of development has passed, we can hope for no improvement.

Our Society may describe and define in the most accurate way the proper system of therapeutics, but the doctor is the agent by which a large part of this system is to be carried out. The teeth appear to me to be getting worse as each generation passes by, but I firmly believe, that with the aid of a proper therapeusis the improvement of the teeth could be made as marked in the future as has been their deterioration in the past.

I am more than satisfied as to the necessity that popular physiology should be included in the scholastic curriculum of girls, and as the State acknowledges the medical education of women, there should be no excuse why every mother, actual or potential in the kingdom, should not be informed as to the important influence of special diet in the production of strong and healthy bone, and the particular kind she should use during the periods of pregnancy and lactation, and give to her children in early life.

And now, gentlemen, as etiquette debars discussion on the Presidential address, I can ride my literary "Pegasus" without fear of being unhorsed, and illustrating in person how "Vaulting ambition o'erleaps itself, to fall upon the other side."

DIFFERENTIAL DIAGNOSIS BETWEEN FISTULA OF THE GUM AND CHEEK BELOW THE INNER ANGLE OF THE EYE AND FISTULA OF THE LACRIMAL SAC.*

By Dr. Julius Scheff, Junr., Dozent at the University of Vienna.

It is well known that the different nerve channels are in close connection, either directly or indirectly, and that painful sensations may be perceived in different ways. It may also be stated as a well ascertained fact that neighbouring parts are included in the painful process even when they are not directly affected by some central or peripheral cause. We act on this hypothesis when we come to diagnose certain affections and to exclude by some one or other symptom. The surgeon relies on the subjective symptoms as well as on those that may be inferred by analogy, and sets himself as his principal object to form a proper picture of the disease, and to exclude another because certain important symptoms are wanting. On the other hand, we meet with diseases which seem to run into each other by certain symptoms, and may be mixed up and thus lead to erroneous conclusions, and as a natural result, to a wrong form of treatment. To these diseases belong fistulæ of the lacrimal sac and those of the cheek and gum below the infraorbital edge. The diagnosis will have to be based on the proper conception of the differential signs which may be assumed to be always present in cases of fistulæ of the lacrimal sac on the one hand, and in fistulæ of the cheek and gums on the other.

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* Abstract of a Paper read at the Annual Meeting of the General Association of General Dentists at Berlin.

Quite recently I have been consulted by a number of patients with fistulæ of the lacrimal sac and fistulæ of the cheek and gums, on the assumption that the immediate cause of their disease must be a diseased tooth or a necrosed fang. They were strengthened in their belief by the fact that they had carious teeth in the corresponding upper jaw. When we come to consider that the external wall of the upper maxilla is itself not so often the seat of a fistulous opening, we must see that it is all the more unlikely that the spot below the lower lid, to which the pus would have to reach, against all the laws of gravity, should be the seat of a fistula in the cheek. I only know of two cases of the kind in the whole of medical literature. One was reported by C. Williams in the *Cincinnati Lancet* of 1867, and the other by Sewill in the *Transactions of the Odontological Society of Great Britain* for 1868. Both cases are described as fistula of the cheek and gum, but no mention is made of a differential diagnosis. Cases, however, are met with, in which, notwithstanding the pressure of decayed teeth or fangs, the opening of the canal lies below the lower lid without communicating directly with the affected teeth. These cases are deserving of a searching examination and a proper differential diagnosis, so that the dentist may be properly informed as to the nature of the disease.

A fistula between the cheek and gum is of infrequent occurrence, and this may make it doubtful whether a sinus of this kind is caused by a diseased tooth, or whether it is due to dacryocystitis, in which case we have to deal with a fistula of the lacrimal sac. A fistula dependent upon dacryocystisis usually opens locally through the skin in the immediate region of the lacrimal sac, as a rule below the ligamentum canthi internum, or the pus, after bursting through the fascia propria of the lacrimal sac extends externally beneath the skin along the lower margin of the orbit as far as the middle of the lower lid, and appears externally after forming an abscess. If the fistula has not formed directly over the lacrimal sac but more or less below and to the outer side, owing to the burrowing of the pus, the connection between the fistula and the sac is shown by a dull red swelling of the skin which extends from the fistulous opening to the lacrimal sac, and marks the course of the pus canal. A blunt pointed sound would only go in this direction and would never strike upon bare bone. In old fistulæ we meet with a flow of tears, or a glassy crude secretion like that of the mucous membrane of the lacrimal sac, which runs out continuously or only on pressure.

The following symptoms may be looked upon as characteristic of fistulæ of the lacrimal sac. 1st. Bursting of the pus on the infraorbital edge or directly below it. 2nd. The probe passing into the fistulous track upwards and never downwards, even in those cases where a short cavity must have formed on the opposite side of the place of opening. 3rd. The special glassy secretion of the fistula of the lacrimal sac exactly resembling crude albumen. 4th. The probe introduced into the fistula goes into the lacrimal sac and can be felt, and gives a metallic sound when it meets a probe passed down the canaliculus. 5th. Fluid injected into the fistulous track, such as milk or any other non-caustic coloured fluid appears through the canaliculi between the lids.

The circumstances, however, are quite different when a fistula, due to the inflammation of a fang of a tooth occurs, and when it opens either in the very spot, or, if not, in the immediate neighbourhood of the place where a fistula of the lacrimal sac usually appears. In such a case the symptoms which are so characteristic of periodontitis would be of importance, such as swelling of the cheek, œdema of the lower lid and violent pain, greatly increased by pressure on the root of the diseased tooth. Of course, there can be no question of a fistula, as long as the pus has not made its way through. If the pus has burst through the skin and the pain has decreased, but not the swelling, the point of exit will take on the characteristic aspect of a fistula. The pus makes its way either above the diseased fang of the tooth, or in the neighbourhood of the inner and lower portion of the margin of the orbit, and the fistula when it appears there, may leave you in doubt as to whether you are dealing with the result of a disease of the lacrimal sac or with periostitis of the fang of a tooth. It is all the more important to come to a proper differential diagnosis, as the treatment is quite different in the two cases. If the cause of the disease lies in some portion of the dental apparatus, a proper examination of these must be instituted at once. In most of these cases we shall find a diseased tooth or fang in the affected portion of the upper jaw, and the point to be settled will now be as to whether the disease is to be ascribed to it or not. If there be periostitis, or if any remains of such be present, there will be no difficulty in coming to a right diagnosis, because the gum over the inflamed stump will be swollen, and painful on pressure. But if the swelling and tenderness of the gum have already subsided, it would be somewhat difficult to come to a right diagnosis without some other sign to help us.

I have already mentioned the distinguishing signs of a fistula of the lacrimal sac, and it only remains now for me to mention those which are always present in cases of fistulæ of the cheek and gums. They are as follows: 1st. A fistula of the cheek and gum is never found directly over the infraorbital margin, but always below at a distance of about $\frac{1}{16}$ to $\frac{1}{8}$ of an inch. 2nd. A blunt-pointed probe introduced into the canal never runs upwards, but always downwards or backwards and to one side towards the offending tooth which may be either a canine, a bicuspid, or a molar. 3rd. The secretion is always purulent, either thick or thin.

When I consider the cases of fistulæ of the cheek, which I have had occasion to treat recently, I must acknowledge that in many of these cases it would have been very difficult, in others almost impossible, to arrive at a correct diagnosis if I had not had certain signs to rely upon. It was only on the strength of these that I could decide in the one case for a fistula of the lacrimal sac, in another for a fistula of the gum and cheek, and in every case the subsequent cure showed the correctness of my diagnosis. These cases afford a striking proof of the necessity there is for a dentist not only to know how to stop well, but also to arrive at a good clinical diagnosis, for a specialty which only relies on a good mechanical training without any clinical observation or experimental pathology, would never attain the high standpoint which most of the special branches of medicine have reached. You will understand, gentlemen, the cause of my insisting, and I think, with some reason, upon the point, that every dentist should and ought to have obtained some degree of medical training before beginning to learn dentistry, for a certain number of affections of the mouth are intimately connected with local and general diseases. How would a good stopper—but a stopper only—manage, if, take for instance, he had to follow some complicated disease of the teeth to its connection with some other branch of medicine, with which he was unacquainted? And in what relation would such a dentist stand to the one, who, besides his mechanical training, was also possessed of a fund of medical knowledge? Certainly no higher than the truss maker to the surgeon, when the former has to make a corset or an orthopædic apparatus according to the latter's instructions.

The lateness of the hour must be my excuse for bringing my paper to an end. Narrowness of views has not been my reason for writing it, but rather the ambition to place, in conjunction with you, dentistry upon the pedestal to which its importance entitles it, and on which your exertions have already placed it.

THE QUESTION OF THE ESTABLISHMENT OF DENTAL SCHOOLS IN AUSTRIA.*

Any one who has had occasion to see the fearful way in which dentistry is practised, on the one hand, by qualified medical men who have not had the advantage of a special training in that specialty, and on the other, by quacks who lack even the first notions of the dental art must have been struck by the importance of founding special schools of dentistry.

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* These remarks are taken from one of the leading medical organs of Vienna, the *Wiener Medicinische Wochenschrift*, and show how very far behind in this respect, we, in England, still leave even the inhabitants of one of the most celebrated continental universities. It is, however, an encouragement to our Austrian confreres not to relax in their efforts for a due recognition of the importance of their branch of surgery. They have now on their side not only the sympathies of their medical confreres, but also those of some of the leading men in government circles, and they can hardly expect ever for a more favourable opportunity to have the claims and status of dentistry duly fixed, once for all, in this one of the most conservative nations of Europe.

One of the principal reasons is that many who cannot afford the great expense of both time and money necessary to acquire a special training in this important branch of medicine at the hands of competent specialists, content themselves with acquiring auto-didactically the necessary practice and learning, and, unfortunately, they find plenty of credulous patients for the purpose.

The Minister of the Interior as well as the college of professors considered the erection of dental schools as imperatively called for. The question was then referred to the Minister for church and education, who also expressed a favourable opinion and applied to the committee named by the college of professors for a report on the subject. The precise sum of money required was stated, and the amount entered in the following budget, and that was the end of the matter. Quite recently, again, the President of the sanitary council has taken up the subject, memorialised the Minister of the Interior and drawn special attention to the importance of the matter. The act was sent to the Minister of education, but without any result. One of the deputies, Dr. Roser, having heard of this brought the whole matter before the Chamber of Deputies on the 22nd of February, and proposed the following motion signed by himself and 28 of his colleagues.

It runs as follows :

"There can be no doubt that dentistry has now ceased to be a trade, and that it stands on an independent basis, and must be looked upon, like all other medical specialties, as an exact science.

"The most celebrated workers in the field of dentistry have shown in the most conclusive manner its necessity and importance, and even the laity know that owing to the close relationship in which the different portions of the body lie to each other, the disturbances of many functions of the body can be put down to the loss and decay of the teeth."

"It appears surprising, therefore, that in not one of our universities do we find a special chair of dentistry, and that all the efforts in this direction of competent judges, namely those of the college of professors of Vienna, should have produced no result."

"There are no establishments in Austria where medical men can acquire the training and practice necessary for dentistry."

"In the capital and principal cities of the empire, the lack of dentists is not felt, but the provinces are sorely tried by this want of a school of dentistry. Is it not a disgrace for Austria to be left behind by other universities?

"Berlin and Leipsig have had dental schools for two years past. The first received a grant of 33,100 marks from the Prussian chamber of deputies, for the building, furnishing and fittings of the Clinic, as well as the furniture, instruments, &c. It has a staff of three professors, a director, two assistants, and a paid servant. Last year 10,000 patients applied for treatment, and 150 students acquired their training. The institute has already proved too small, and several important changes have been commenced.

"Halle, Heidelberg, and Breslau each have a small institute. Stockholm received a state college last year; Geneva has a large school of dentistry built in the most splendid style; France and England have similar institutions, and Buda Pesth is on the point of possessing one, at least, the necessary space for one has already been granted at the Rochus Hospital.

"The call for dental schools in Austria is, therefore, well founded, for by them a stop will be put to quackery, and our fellow citizens will cease to be maltreated, and our students will not be forced, as is now so often the case, to go to neighbouring countries, when they wish to prepare themselves for the practice of dentistry.

"In the interest of the suffering public the signatories therefore, beg to ask His Excellency the Minister of interior, the following question: "Does he think of meeting the urgent need for chairs of dentistry in the imperial and royal universities? What steps have been taken in the matter?"

We now anxiously look forward to the result of this interpellation, and with it, to the settlement of this important question.

THE IMPLANTATION OF TEETH IN ARTIFICIAL SOCKETS.

By G. L. CURTIS, M.D., D.D.S., Syracuse.

THIS subject is one intimately connected with the progressive and experimental features of our profession. It illustrates the rapid and startling advancement which has characterised the last twenty years of dental history. As in other departments of scientific research in general, and of dental investigation in particular, the most liberal and daring members of our profession have ventured boldly into the paths where a score of years ago no one would have dared to take even a single step. This modern fearlessness of investigation commands at once my respect and sympathy. As far as I am personally concerned, I wish that all dentists would welcome the coming of new ideas; would receive kindly and considerately suggestions which at first sight may seem visionary and even preposterous, and would give all new methods a fair and unprejudiced trial. While urging all this, I ask for myself and other believers in new ideas the severest criticism of, and the most thorough experiments with, any new method of work or treatment. Whatever is good in these new departures will endure the test of time and investigation; whatever is shown to be unworthy I shall be the last to urge upon the profession or longer uphold. To those who from any cause look with distrust on new ideas and methods, I may be pardoned if I address a few words.

Some of these conservatives even frown upon and condemn any improvement or novel theory, whatever may be its reasonableness and promise. Such may be said to stand with a pail of water ready to quench with it the fire of youthful enthusiasm. They are the last to approve advancement, and often their adherence comes when the new practice is so firmly established that future distrust would be unreasonable if not absurd. Now I recognise the need of conservatives and their service in restraining and controlling too eager radicals, yet they must not go too far in crushing and repressing the ardent experimenter who has the courage to run the risk of rebuff and failure in his search for new truths and desire for better ways. Let criticism, if it must come, be kindly and helpful ; let all be prepared to accept demonstrated truths, however destructive they may be to cherished memories ; let the new ideas and methods have a fair chance before they are rejected.

The subject which I am to discuss briefly to-day is one which challenges attention from its startling and radical basis. It is an excellent example of the new methods to which I have just referred—a question of the utmost importance to our profession. And may I not ask for it a fair, candid, even kindly treatment from those who may not be prepared at present to accept it as a demonstrated truth? It is my thorough belief that the progressive spirit in our profession should be fostered and encouraged by the older men. We are all groping somewhat in the dark ; none of us has attained complete knowledge, and it is only our own conceit that causes us to esteem our day and generation as the flood-tide of knowledge. We have but begun the task of perfecting our work. If inquiring and daring spirits are rudely repressed, the rate of advancement is made slow, and men are kept back from giving out the results of their thought and investigation. I plead to-day for a full measure of sympathy for what is novel and puzzling. Because our fathers did not do so is, in these days of wonderful discovery, the weakest of all conservative arguments. Therefore, in presenting this subject to-day, may I not be pardoned in advance for not having a wider and more full explanation of the new method to lay before you. Those of us who are undertaking to carry into practice this idea have met with unlooked for success, and expect that time will approve what at present still, in a measure, must be counted experimental. While I am a convert to and practical worker in this latest and most wonderful advancement in dental surgery—the implantation of natural teeth in artificial sockets—I recognise that some phases of the question are still in theoretical shape ; but, on the conclusion of experiments which I have begun, I hope to lay before the profession a complete and conclusive demonstration of the points which at present are partly theoretical.

In a paper on this same subject, read at the union meeting of the Fifth, Sixth, Seventh and Eighth district dental societies in October, 1886, and published in *The Independent Practitioner* of January, 1887, I described in detail the process of implantation, and therefore will not needlessly occupy time in repeating that description. I may state briefly, however, that my experiments have extended over a period of seven months, and that they were made under both favourable and adverse circumstances, and both antiseptically and without the aid of a germicide. I have yet my first failure to record ; not an unfavourable feature has appeared in any instance. Only one accident has attended my experiments. A patient who could not readily find a flat iron to crack nuts with determined to try her newly-implanted tooth. This she did and succeeded in breaking off a part of it. My first five cases of implantation were described in the paper referred to. In the first case, the original tooth had been lost six years. Atrophy of the alveolus and recession of the gums were very marked. Seven months after the operation it was observed that the implanted tooth and surrounding tissues bore a perfectly healthy appearance. The process apparently had been reproduced and the gums restored to their natural condition. For six months previous to the examination the tooth had been in constant use. Cases two and three were the implanting of a superior bicuspid and two molars, the latter being ingrafted two weeks after the bicuspid. Thus the space between the cuspid and the wisdom tooth was filled. The teeth had been extracted seven years before, and the shrinkage of the process and the denuding of the contiguous roots were more decided than in the first case. As the articulating teeth in the lower jaw had elongated considerably, this condition made up in part for the absorption. Consequently the process and gums have not been restored to their normal fullness. They have recovered sufficiently, however, to enclose the roots of the adopted teeth and to protect the cementum of the remaining teeth. At the present time these teeth apparently are as firmly attached as any in the jaw, and they are doing all the work of mastication, owing to the mal-articulation of the teeth on the other side of the mouth. Case four was seen two months ago, five months after placing the stranger tooth in position. It was then firm and healthy, and had been in constant use for four months. The fifth case was an operation done under very unfavourable conditions. I looked at it two weeks ago and found it to be one of my best operations, thus far, examined. In all these cases neither pain nor discomfort has been experienced. The one thing to impress upon the patient is that care must be taken not to use the implanted teeth until they are sufficiently firm. These teeth have been examined by a number of dentists and physicians, and with one accord they have acknowledged the success of the operation and pronounced the process of healing complete.

Since writing my previous paper on this subject I have continued with greater fearlessness the implantation of teeth. The first of these operations was performed December 13th, 1886. A superior bicuspid was so securely ingrafted that ligature was not resorted to. It exhibits the same happy results that characterize the cases previously commented on. The remaining operations have been done largely with the object of showing the mode of treatment to dentists and surgeons seeking light on this subject. They are of a date so recent that I cannot report further than to say that the first unfavourable sign has yet to develope, and the first complaint to reach me.

The initial feature of the operation which has marked it as one of the most wonderful surgical discoveries of the age, is the apparent resuscitation of what heretofore has been supposed to be dead cementum. The placing of a tooth in a newly-made or artificial socket is in itself of no consequence, but the uniting of the two tissues until a normal state exists is the astonishing feature. The evidence goes to show that the apparently dead cementum does develope life, and that implantation effects a complete and permanent restoration to usefulness of the lost organ. We may not be able to comprehend how this possibility of life is continued, yet at this time no other satisfactory explanation than that the cementum has the power of resuscitation has been offered. It may be that this union is formed by the attachment of the cementum to the bone by reason of the life element in the former tissue. It may be that the formation of the bone extends into the cementum and dentine, and completes the process of healing without any life as such existing in the cementum. Again it may be that the restoration is due to the joint life and growth of both the bone and the cementum. Does not this last theory look reasonable, in view of the acknowledged tenacity of life possessed by any part of the tegumentary system? It is an established fact that the process of repair in bone is by granulation, and hence may we not look for a similar action in the case of implanted teeth? This, in the case of implantation, is yet partly theory. We now, however, have implanted teeth which have been in their new relation sufficiently long for the completion of any process of healing. When one of these teeth is removed, with all its surrounding tissues apparently restored to a normal condition and subjected to microscopical examination, then we shall know accurately what condition the tooth is in, and what processes actually have taken place. Such an investigation I have planned already, and I regret that the press of other duties has prevented me from finishing it in time to lay its results before you. This examination probably will result in showing whether the socket is invested with a new lining membrane, the condition of the cementum, the exact mode of attachment, and also whether bone had been reproduced. If there is no membrane, is not ankylosis the form of attachment? If ankylosis exists, the crooked and distorted root will be best and longest retained. It is not an uncommon thing to find a natural tooth which for years has performed its work, although in a condition of ankylosis. There has long been felt the need of a method of preventing the absorption and atrophy of the alveoli and the recession of the gums, resulting from the loss of teeth. Thus the roots of teeth adjoining the one removed are laid bare and disease invited. The restoration of these tissues to their natural condition follows the operation of implantation, which thus is demonstrated to be the remedy so long sought. If these teeth become permanently retained, will not this also prove a great feature in bridge work? The full use of these implanted teeth, even for a few years, bringing, as they do, additional power of mastication and restoring the natural appearance, would be in itself, to my mind, the complete success of this new departure in dental practice.

THE IMPLANTATION OF TEETH IN ARTIFICIAL SOCKETS.

By G. W. Weld, M.D., New York.

Nevertheless it seems to me that all, the advocates and enthusiasts of the implantation of teeth can hope for, in the way of success, is to be compared only with the success which, in the past, has been associated with replanting and transplanting. The experience of a number of our professional brethren who have experimented in this direction under favourable conditions, has in the large majority of cases resulted only in failure.

In all similar experimentations such men as Paré, Berdmore, Hunter, Coleman, Waters, Thomas, and others whom I might mention who, at first, have been extremely confident and enthusiastic on the subject, have finally been lead through discouragement, in consequence of many failures, to abandon the practice.

Mr. Bell, editor of Hunter's *Treatise on the Teeth* has said in his connection, "that the practice of transplanting originated with Hunter, under whose supervision it was frequently performed. Had the results of all the cases been known to him, however, it is probable that his recommendation would not have been written. There is not, I believe, a single instance of its perfect success."

Waters and Thomas have been compelled to give up the practice for the same reason.

Owing to the similarity in the operations of *implanting* and *transplanting*, and the bond of union which is set up, and temporarily sustained between the cementum and the walls of the alveolus, the experience and conclusions of these gentlemen must have some weight in forming an estimate of the ultimate success of implanting.

Of course it may be argued that the operation is altogether new, and that transplanting is no criterion by which the success or non-success of *implanting* can be judged. To a certain extent this may be so. It has been said for M. Pasteur in his novel cure for hydrophobia that no one, without experience, could rightfully gainsay his propositions, until time had demonstrated either their truth or falsity. So far as this argument goes, both M. Pasteur and Dr. Younger have had an advantage over those who have taken exception to their methods. Whether it was M. Pasteur or Dr. Younger, however, who were indicated by the Prophet Zechariah when he cried "*woe* to the idol shepherd" is not certain. But in the light of the present facts regarding M. Pasteur's novel ideas it is difficult to escape the particular prophecy against the "idol shepherd," that "his right eye shall be utterly darkened," for through the recent conclusions of Dr. Lautaud, editor of the Paris *Journal of Medicine*, he has just received a very "black eye."

It is possible, so far as Dr. Younger's practice is concerned that more time will be required to determine its worth.

Admitting, however, that a tooth may be retained in a new socket made in the alveolus, is only to acknowledge the sequel or the succeeding part of transplantation.

Let us briefly analyze Dr. Younger's progress and present position on the subject.

First—His experience dates from the 13th of June, 1885,* —a little less than two years, and about the same length of time that those who have experimented in transplanting begin to realize that the ultimate end of all their efforts is a failure.

Second—He claims that he has had wonderful success; but every one who has transplanted has had and claimed at first the very same thing.

Third—the want of success in transplanted teeth has been due to the absorption of their roots; a condition of affairs which Dr. Younger, in one case, has admitted that he himself has observed on the roots of *implanted* teeth. Thus we find, in looking at the practice from a practical standpoint, that while the doctor cheerfully recommends for adoption implantation, as being more permanent than transplantation, he, at the same time, "out of his own mouth," virtually places it on the same level.

With this understanding of the question it seems hardly necessary to touch upon the *rationale* of the process of repair. Those who have experimented and made observations, and tabulated their results, know that the roots of either a replanted or transplanted tooth will, after a certain length of time, in a great majority of cases, become partially absorbed, and that this is the direct cause of their "dropping out." Dr. Waters, of Boston, who has experimented largely in this direction, found this condition in almost every case.

It does not seem reasonable to suppose that Dr. Younger's theory regarding the re-attachment is well founded, or that it will ever be adopted by the profession. In fact he has already in a frank and good natured manner acknowledged that he "had to make a theory" to fit the case and that the theory of revitalization of the pericementum suggested itself to him as being the most natural one. It seems more probable that when an implanted tooth becomes reattached to the jaw bone it is only in virtue of its being tolerated as a foreign body precisely as other foreign bodies in other parts of the system have been known to be tolerated and become incapsuled. That an implanted tooth is tolerated and temporarily incapsuled in the jaw is unquestionably a fact; but this, by itself from a practical standpoint proves nothing regarding its future, in as much as both replanted and transplanted teeth, as above stated, are similarly retained.

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*Dental Cosmos, January, 1887, p 62.

†Remarks before the First District Dental Society, Dental Cosmos, Feb. 1887, p. 131.

In an article recently published in the "American System of Dentistry," * I have stated that the process by which the erosions upon the roots of replanted teeth are formed is not fully determined. Dr. Rollins states that "the microscopical changes wrought by it cannot be distinguished from the absorption seen in deciduous teeth with living pulps," and claims that "these lunar excavations seen in teeth with *dead* pulps are produced, as they are admitted to be in teeth with *living* pulps, by the agency of living cells."

This is the teaching of modern pathology, the probability being that these cells, "giant cells," or "osteoclasts," secrete erosive fluids, which, acting upon the organic as well as the inorganic constituents of the devitalized tooth substance, produce their gradual decomposition, solution, and absorption. The process has its parallel in the erosions found upon osseous sequestra which have been imbedded in living tissue.

The conclusions which I have arrived at with regard to the practice and phenomena of replantation (which hold good either for implantation or transplantation), may be thus summed up:

First—"That these teeth will, as a rule, speedily reattach themselves and become firm in the alveolar sockets from which they were taken; but the length of time they remain in a useful condition varies in each individual case, and is dependent on the constitution and age of the patient and local and systemic conditions."

Second—"That a full vital relation may sometimes, though rarely, be re-established, but that usually it exists only during that period of time after extraction when the root approximates a natural and normal condition, and terminates with the death of the periodontal membrane and the protoplasmic constituents of the cementum and dentine; the tooth then becoming a foreign body, and gradually undergoing disintegration through the action of giant-cells or osteoclasts."

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* American System of Dentistry, Vol. II., p. 382.

Third—"That devitalization of the periodontal membrane, cementum and dentine usually speedily follows replantation, the tooth then retained in position by fibrous connective tissue and the granulations from the soft tissues penetrating the lacunæ and canaliculi of the cementum."

Fourth—"That the severance of this connection and the failure of the operation may be due either to the gradual loosening, resulting from continued oscillation, or to the supervention of acute inflammatory processes to be arrested only by the removal of the foreign body."

Fifth—"That in view of the possibility of danger and the certainty of ultimate failure attending this class of operations, the practice of replantation, either for the purpose of filling sensitive carious cavities, the treatment of neuralgic affections, or of alveolar abscess, or for the purpose of engrafting porcelain or other crowns, is unjustifiable."

OVERTAXING OUR PATIENT'S STRENGTH.—Dr. Eldridge C. Leach, Boston, makes the following suitable remarks on this subject, in the *Archives of Dentistry*. It is the duty of every dentist to rigidly insist on a wise and judicious care of our patients power of endurance. Not long since a lady æt. 24 years, allowed him to extract twelve upper teeth without administering ether. He urged in vain that ether should be taken. She bore the pain with perfect courage, and went away feeling perfectly well. On reaching home she experienced a sinking sensation, and was obliged to take to her bed. A medical man was called, and found her pulse to be weak, and beating 100 per minute. She was unable to sleep during the night, but had frequent sinking symptoms which, however, left her by morning. At the end of one week she was just able to go about the house. The same patient visited Dr. Leach subsequently, and wished to have four inferior molars extracted. He insisted on administering ether, and she consented. The patient being etherised he extracted the teeth. In one hour's time she had fully recovered from the ether and had not the least trouble afterwards. What is said of extracting is quite as true of overtaxing our patient by long and painful operations for filling. Our patients' courage may be good, but their powers of endurance inadequate.

British Journal of Dental Science.

LONDON, APRIL 15th, 1888.

THE INAUGURAL ADDRESS OF THE PRESIDENT OF THE ODONTOLOGICAL SOCIETY.

It is no easy matter now-a-days for an incoming president to turn new ground, and to give the society over whose meetings he rules, the novel facts he has ploughed up. Apart from the politics of the profession, which are very properly tabooed at the Odontological Meetings, there are but few openings for fresh departures, and still fewer which can be treated with a light hand and in a brief space of time. Dental ethics is, of course, a *piece de resistance* which, even if well worn, can never be threadbare until millennial days dawn for the brethren of the forceps and elevator, but dental ethics may fall upon odontologic palates, at least Mr. Corbett appeared so to think, and hence gave the subject a wide birth. His theme, that of the influence exercised by diet upon the organism, and especially upon the teeth, is one of the greatest importance and one which has alike received but scant attention at the hands of physicians and dentists. In some articles which appeared in our pages more than a year ago, entitled the "Teeth of a Nation," we indicated in somewhat similar lines to those which Mr. Corbett recently traversed, what the consequences must be when a national dietary becomes unwholesome or insufficient. Mr. Corbett's remarks deserve the most careful consideration, and his admonitions alike to the members of his own profession and medical men at large should be taken to heart. It is easy for people to say "Oh, we knew all this before, there is nothing new about it," but, unfortunately, it is always familiar themes which obtain scant attention or even pass wholly unheeded. So is it about dietary perversions telling against the efficient building up of the teeth. Dentists at once recognise the correctness of statements such as those advanced by Mr. Corbett, but when it comes to enforcing warning and establishing example, but few are willing to undertake duties which in theory they acknowledge to belong in common to their own and the medical profession at large. A suggestion advanced in the course of the address was that girls—potential mothers, should have sufficient physiology taught to them to appreciate the importance of attention to their health during pregnancy, as well as to understand the effect upon their own organism, and through it upon that of their offspring, of various kinds of foods. The shallow conventionalities of the day have much with which the thoughtful hygienist cannot but find fault. Women are, as a rule, instructed to aim at the *spirituelle*, to simulate a "ladylike appetite," and to achieve this end they destroy their digestion by a too frequent indulgence in "snacks" if not in "nips." Common sense attention to daily diet and a rational study of dietetics are by the bulk of womanhood voted as unladylike and gross. Of course the study of elementary physiology, will do much to instruct mothers about personal care and supervision of their offspring, but there are others besides the mothers who need instruction. Not one boy in fifty recognises the truth of the laws of heredity. An enfeebled, dissipated father regards with surprise and disappointment the dwarfed and ill-developed child which, if he only knew it, is but the crystallised embodiment of its father's reckless acts, and ungoverned passions. Mr. Corbett's happily expressed phrases lead unmistakably to this development of his ideas, that a nation to be happy and healthy must have good teeth, must have dentists and doctors who know enough of their physiology to teach the parents and make them believe that their offsprings' physical welfare hangs upon their observance of certain plain and straightforward rules of dietetics. We commend the whole address for careful thought, and broad common sense utterance, and we are sure that if its precepts are well taken to heart, much of the neglect of and consequent ill-effects to the teeth of the coming generation will be avoided.

Presentation to Mr. C. Sims, Birmingham.—At the Birmingham Dental Hospital recently a meeting was held of the friends, pupils, and colleagues of Mr. Charles Sims, L.D.S.R.C.S., Eng., for the purpose of presenting him with a testimonial, consisting of a purse of gold and a handsome illuminated address, as a recognition of the faithful and valuable services which he has rendered during a period of 17 years, to the Dental Hospital and School, from the staff of which he is retiring. There was a large and representative attendance of dentists from the Midland counties. Letters were read from Sir Edwin Saunders, Sir John Tomes, Sir Thomas Martineau, and Mr. J. S. Chance, Chairman of the Hospital Committee, all of whom expressed cordial approval of the object of the meeting.

Prophylaxis in Dental Caries.—M. Le Gendre in a very important article in the *L' Union Medicale*, says, with regard to the Prophylactic Antisepsis of the Teeth, "We might almost affirm that if the necessary care were taken from the time of birth, without discontinuing it during infancy and during adolescence, adults would have sound teeth ; unfortunately parents do not attach much importance to primary dentition, and carious teeth are disregarded." This inattention to the primary dentition M. Le Gendre looks upon as a great error. During collegiate life the teeth should be attended to, and tooth brushes used. The frequency of dental caries amongst scholars is very great. Sher found 189 carious teeth in 169 scholars. In reference to the cause of caries, M. Le Gendre gives the testimony of

MM. Galippe, Malassez, and Dr. Miller that microbes play an important part. The former has described a parasite which causes alveolo-dental periostitis. This micro-organism is powerless against enamel. Miller believes that the first stage of dental caries is caused by the decalcification of the tissue of the tooth, the chemical result of acids produced by fermentation in the mouth ; but the second stage is due to a micro-organism. Miller has recognised five kinds of microbes, but there is one specially responsible for the caries, and he has tested this on sound teeth. A weak solution of sublimate is effectual in the first stage. To prevent the accumulation of tartar is an important indication. A useful wash for the mouth is made of

Benzoic acid....................	3	grammes.
Thymic acid....................	0.10	centigrammes.
Tincture of eucalyptus.........	10	grammes.
Water..........................	1000	„

To be used night and morning.

TEETHING TROUBLES OF A CROWNED HEAD.—Under this caption the Paris correspondent of *Truth* writes. It used to vex Frederick the Great to think that the ruck of human beings would only see in kings, beings having little in common with ordinary mortals. I try not to be with the ruck, and so repeat now what I hear of the teething troubles of Alphonso XIII. They are said to be complicated with the nervous disease from which so many Emperors and Archdukes suffer, and more especially in the Carolinian branch of the Lorraine-Hapsburgs. From this branch his infantine Majesty comes in direct descent through Queen Christina. The Archduke Charles, Napoleon's opponent, was a man of capacity all round. Only, he was so troubled with neurosis that he had fits constantly, and after each was more a log than a sentient human being. A great battle was once lost by Austria because when he was chief in command he had a fit which deprived him of speech and memory for three hours. Instead of marrying some contadina of base blood and fine health, he espoused a cousin, and his eldest son took for his wife his own niece, the Archduchess Elizabeth, grandmother of the youthful King of Spain. This Princess, having had a wide experience in treating Imperial children afflicted with the ancestral neurosis, has gone to Madrid to attend to Alphonso XIII. Given the King's malady, it does not follow that he will be an idiot. Charles V. and Peter the Great were both subject to fits, and yet men of political genius. However, there is a danger of cerebral degeneration at an early stage, and more than a danger at a late stage. The late Emperor Ferdinand was obliged by his epileptic affection to abdicate. He had such frequent attacks as to be unfit to give audiences or to show himself in public. The neurosis dates a long way back, to the family of Isabella the Catholic, and was perpetuated by in-and-in marriages, so that the Spanish Hapsburgs dwindled into morose idiots, and the Austrian Hapsburgs were scarcely less degenerate when the Lorraine blood came in to renovate them somewhat. What renewing potency it had is now pretty nearly used up, and degeneration goes on apace. The Court doctors at Madrid, of course, protest against the rumours about the King's health. It is the way of all such to deny that Royal patients are ever ill until they are past the power of medicine to cure. The Duc de Montpensier's faction are active because his Majesty "cuts his teeth" so hard.

A CASE OF MULTIPLE SALIVARY CALCULI.—Dr. Nikolai J. Moiseeff, of Shtchizry, reports the case of a retired major-general, aged 70, who sought his advice for incessant profuse salivation, pain on deglutition, and sublingual swelling of several years' standing. An oblong, hard swelling was found along the course of Bartholin's duct, which, even on slight pressure, gave the finger a distinct grating sensation. The duct was considerably distended along its whole course, and contained three salivary calculi lying in close contact. The nearest and smallest concretion, of the size of a big pea, was easily removed with forceps, but the other two could be extracted only after slitting up the duct, since they were considerably larger, especially the deepest one, which measured two centimetres in length and one in breadth, and, in addition, was intimately adherent to the gland substance ; it resembled a bird's bill in shape. When dry it weighed 2.2 grammes, (32 grains) and consisted of a comparatively hard and compact nucleus, with a spongy, friable outer capsule. The smallest calculus was of pyramidal form, of spongy consistence, and greyish yellow colour ; while the middle one was quadrangular, with rounded angles, and of a distinctly laminated structure. The total weight of the dried calculi was thirty-eight grains. The wound healed well in a week. Dr. Moiseeff has been unable to find another recorded instance of multiple calculi simultaneously present in the same salivary duct.

THE TEETH IN INHERITED SYPHILIS.—Mr. J. Hutchinson, jun., recently showed before the Harveian Society two patients, and a number of drawings illustrative of the malformations characteristic of inherited syphilis in the teeth, and the chief points discovered by Mr. Hutchinson, sen., were recapitulated. The fallacy of looking for characteristic signs in the temporary teeth was dwelt upon, their liability to premature necrosis and falling out being illustrated by specimens. Those teeth which in after life showed syphilitic deformity in the greatest degree were those which calcified first, and which during the year lay the nearest to the gum surface, namely, the permament incisors and first molars. The three small projections at the cutting edge of the central incisors seen in normal teeth were noticed, and the wearing away or non-development of the median one was described in connection with the formation of the semilunar notch and the narrowed cutting edge. The horizontal erosion of enamel resulting from mercurial stomatitis in infancy and its occasional coincidence with true syphilitic malformation of the teeth were illustrated, and stress laid on the fact that the upper central incisors were the real test teeth of inherited syphilis, though many children with the inherited disease presented perfectly normal teeth. No explanation could at present be given for the preponderance of female over male patients observed in connection with inherited syphilitic disease of the eyes and auditory system.

Beware of Strange Clients.—The following incident, which occurred to a practitioner of Nice, gives the rationale of the above stated piece of advice. A patient called and asked him to extract one of his back teeth. The operation being completed, the patient, taking out his cigar-case, begged the Dentist for a match. Accordingly a box was produced and handed to his patient. The latter, however, had hardly touched the box when he exclaimed that the matches were contraband. With many apologies, he drew up his report, and it then transpired that he was a M. Roux, one of the detectives of the Chemical Match Company. It may be imagined that the discovery was accidental ; by no means. Combining business one can hardly say with pleasure, but rather with pain in this particular instance, an accomplice entering from the waiting room acted in due and legal form as witness of the *procés verbal.* Prosecuted for having contraband matches in his possession, the dentist tried to turn the tables on his opponents by bringing against them an action for "violation of domicile." The Court decided, that the Company's agents have a right to enter establishments of public resort, such as restaurants, cafès, and so forth, but that their power does not extend to private houses, especially when they have obtained access to them by stratagem. On the other hand, the Court ruled that there had been no "violation," in the strictly legal sense of the word, of the dentist's abode, for he had opened his door to the two agents of his own free will and accord, nor had force been used in seizing the matches, seeing that M. Peter Lemonnier, the dentist, had himself handed the box to M. Roux.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

SOME PRACTICAL HINTS FOR THE OPERATOR.*

By GARRETT NEWKIRK, M.D., Chicago, Ill.

THE principal instruments of the dentist are the chisel, probe, drill, and plugger. The scaler for removing tartar, and the hoe and hatchet excavator are but forms of the chisel. The complex instruments, bur, broach, &c., are only modifications of these.

CHISELS.

Chisels are nearly all too coarse, too thick and heavy. The writer grinds down his chisels. With plain, but thin and sharp chisels, separating files and disks are seldom needed. Many operations fail because the operator does not cut away weak margins, already tainted with decay, or liable to be broken. The S. S. White No. 45 chisel, the writer finds most useful, and will soon become ground down to smaller size. As the instrument comes from the maker it is too clumsy—the blade being twice as thick as needful. It should accordingly be ground down, and then is most serviceable for fissures, especially in lower molars. It cuts forward and backward—by a turn is changed from a right to a left. It should be held as one would hold a pen, steadying the hand by the third and fourth fingers on the front teeth. The "push" cut is made with the "muscular" movement of penmanship—that of the arm; the "pull" with the "finger" movement. Another useful form of the chisel is one with concave edge, for bevelling or rounding the edges of cavities, preparatory to filling. An excavator is only a form of chisel. As it is formed for making an excavation, it should agree somewhat in size and shape with the place to be excavated. Rounded not square covered instruments should be used. The "spoon" shaped and "rapid" excavators were suggested by the right idea—that of having something to slip under the decayed dentine, and lift it out. No great variety is needed. Large excavators are bad: one or two nearly straight, some with curved shanks, and some pairs of rights and lefts should be used. A curved bladed excavator is best. There is less force required, and less irritation to the sensitive matter in the dentinal tubuli. The writer would dispense with the hoe and hatchet excavators. A few special forms are required, as for example, two or three long hatchet blades for reaching down into deep proximal cavities in bicuspids and molars, two or three narrow blade hoes for retaining grooves in surfaces not directly accessible by the engine.

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* Read before the Central Illinois Dental Society, October, 1887.

SCALERS.

Most scalers in use are too clumsy. The force should be applied at the line of union between the tooth and the tartar. A half dozen instruments are all we need in the great majority of cases to clean a set of teeth, and thoroughly. One or two small chisel scalers—after Cushing—thin, delicate, curved, will, in the majority of cases, remove the deposits nearly all the way round the tooth, and with the exercise of but little force. A right and left curve chisel for the gum margins of bicuspids and molars, (like Dr. Harlan's,) one or two "hook" instruments for reaching up in certain locations beneath the gums, and a three-sided point, nearly after the Riggs' pattern, will complete a set sufficient for almost anything in this line of work. The wood points for carrying polishing powder are valuable, the medium wheel No. 6 is all any one needs. Take a screw-cap porte-polisher, throw away the cap, bend the points together a little so that the wood shank will fit; break off about half the shank and insert close up to the wheel. It will run true. When done with, it can be picked out in an instant and thrown away, and the mandril is ready for the next case. A little cup—the lid of an ointment box will do—should always be ready for a thimble full of pumice and a few drops of water, and cleaned after each operation. This insures a new point and fresh powder for each case. A small wide-mouthed bottle or porcelain cup should always stand convenient to receive a bur when it has become dull. Different sorts of burs, small round, large round, wheels and cones, drills, &c., may be kept very conveniently in small cups or jars. The best drills for starting pits, retaining grooves, &c., are small fissure burs, with the end wedge-shaped, and kept sharp on an Arkansas stone. The Arkansas stone should not be in a closed case, but open, and where it can be available in an instant. Much is saved in order and convenience by having several of the drawers of the cabinet divided into departments adapted to the reception of all sorts of small articles so that each may have its proper place, and be constantly at hand when wanted. Any dentist can do this for himself at odd moments. Thin bleached muslin, cut or torn into pieces about 3 by 4 inches, is a very neat and convenient article to have by the dental chair. For examinations of the lower or upper front teeth, or in removing tartar from them, where we have to keep the lip out of the way, the muslin has sufficient starch to take possession of the slippery mucous membrane and hold it against considerable muscular resistance, and it is much more pleasant to the patient than the insertion of the naked finger. The muslin is also valuable when operating for the removal of tartar to cleanse the instruments from time to time, and for absorbing the blood as it oozes from the gums, obscuring the view of the operator from the particles to be removed. Floss silk is essential for operating. It is convenient to have the spool hung on a wire at the back of the cabinet, and a free portion of the thread passing over the top and through a little ring in front.

RUBBER DAM.

The writer's experience is, that (1st), a "medium medium" is the best for nearly all places, and can be used anywhere. (2nd), rubber begins to deteriorate from the hour it is made, and so the newer it is the better. Hence, it is well to buy in small quantities and often. (3rd), cheap letter envelopes afford the best means found for holding rubber pieces one may wish to use again for the same patient. The best way is to seal the envelope and then clip the end. Of course the piece of dam should be washed and dried immediately after using, and before it is placed in the envelope. Some advocate placing the dam always over several teeth, though the operation should be confined to one proximal cavity or two adjoining. This, the writer thinks, is seldom necessary, and often objectionable. The "drawing" sensation and consequent discomfort of the patient is increased, and, moreover, there is apt to be a rapid pulling together of the separated teeth, if they have been previously wedged. In placing the dam on two teeth—say a bicuspid and molar, or two molars, it is usually better to pass it over the posterior tooth first, adjust the clamp, then to the next which may need nothing to retain it, or at most, a ligature of floss silk. For filling simple crown cavities in molars or bicuspids, for buccal cavities in molars or bicuspids, or buccal cavities on any of the teeth it is seldom necessary to pass the rubber over more than one tooth, and there is less liability to leakage by so doing. Spittoons should always have a polished glazed surface and be thoroughly cleansed with water.

THE ARCHIVES OF DENTISTRY.

WARM INSTRUMENTS FOR FILLING WITH AMALGAM.

By Dr. B. Q. Stevens, Hannibal, Mo.

The writer considers the use of warm instruments when filling with amalgam has especial value. Fillings so made, have, he thinks, better edge, strength and retain their colour better than those effected by the use of cold instruments. Although much heat cannot be used in dealing with living teeth, when pulpless teeth are under treatment you can heat them more and by applying pieces of tin foil you can work nearly all the mercury to the surface and wipe it off with cotton until your filling is perfectly solid. The writer recommends filling the cavity half-full, then warming a ball-shaped instrument and burnishing thoroughly; finishing the filling with as dry amalgam as will go well in place. He places small squares, say No. 10 or 20, of tin-foil, then burnishes it down with hot instruments, and wipe off the mercury as long as it can be got to the surface. In this way the filling is very solid.

The writer thinks there is no better cheap way of restoring a bicuspid or molar, that is half broken down. After the roots are filled he inserts one or two screws of gold, silver, or even brass, and encircles the tooth with a band, coating the inside with shellac varnish; then fills with amalgam, rubbing thoroughly with hot instruments, and after a day or two remove the band and polish my filling and it will be very durable and not at all unsightly.

HEADACHE AS A RESULT OF WEARING AN ARTIFICIAL DENTURE.

By E. C. **Bryant**, D.D.S., Pittsfield, Me.

Br. Bryant narrates the following instructive case. A young man about thirty-four years of age, in good health, sought advice (1884). He said in 1880 he had his upper teeth extracted, and a few months afterwards an artificial denture was inserted. A few days after beginning to wear them he felt a hot, burning sensation in the palate, which was soon followed by a severe headache. He removed the plate and soon felt relief. Several attempts were made to wear the plate but invariably the burning sensation of the palate and the excruciating headache would follow ; yet he was a man who had never suffered from this malady previously. His dentist told him it was due to poisoning from red vulcanite, a plate of the black was recommended, and subsequently made. but the result was the same ; headache invariably followed any attempt to wear the teeth. Celluloid was tried but also produced headache. Subsequently a plate made of Riese's metal was made and the teeth fitted with rubber. This plate was worn continuously but gave rise to no headache. The writer asks, why ?

METALLIC MODELS FOR RUBBER AND CELLULOID WORK.

By T. M. **Allen**, D.D.S., Birmingham, Ala.

To avoid shrinkage of rubber in vulcanising and the roughness of the palatine surface of the plates causing irritation of the gums, the writer recommends metallic models and finds they succeed better, and the plate comes out of the vulcanizer with a hard, smooth polished palatine surface ; and where gum teeth are used there is no shrinkage in cooling and no broken blocks. The method of making metallic models is as follows : (Plaster is used exclusively for impressions.) After taking the impression in plaster he puts over it a very thin sheet of base plate wax, pressing it down in the alveolar ridge depressions with wax, knife or finger, or warm the wax and replace the impression in the mouth, pressing it up well, then remove from mouth, (be sure to get your impression high up to the alveolar borders); trim the wax around the edges of the impression a little higher than you will want your rubber plate to come up on the alveolar ridge, then oil exposed parts of plaster impression and fill over wax and all, as though you were to make a plaster model. When hard separate impression and model, being careful not to break or mar impression, remove wax and cut two or three shallow grooves in the model from heel to plate to near the edge of alveolar border, cutting vents for pouring metal and for escape of steam at heel of plate ; then replace model and fasten it to impression with wire or clamp and dry impression and model by dry heat, and while hot, melt metal for making model and pour into the gate at heel of impression, when cold separate from impression and you will have a thin metallic coating over your plaster model ; you then proceed as with an all plaster model. The metallic coating over the plaster model gives it strength to resist pressure in closing flask, and also overcomes the warping or shrinking tendencies of the rubber. After vulcanizing, remove plaster from the metallic coating, and with a pair of pliers or other suitable instrument bend down the alveolar edge of metal and you can separate the metal from the plate without any trouble, and will have a hard, smooth polished palatine surface that will not irritate the mucous membranes, and is much easier to keep clean. There is no danger of breaking down your model in closing the flasks, no matter how deep your undercuts may be ; and as there is no giving way of the metal coating your plate cannot warp, shrink, or crawl from over the condyles as when plaster models are used. The metal used can be Babbitt metal, block tin, or tinner's solder. The two last do not tarnish. Never use lead, as it oxidizes and blackens the rubber. After vulcanizing the flasks should be taken out of the vulcanizer as soon as possible, cooled off and opened, or set away to cool. If left in the vulcanizer the plaster becomes soft.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, Held Feb. 6th, 1888.
MR. S. J. HUTCHINSON, M.R.C.S., L.D.S.
Vice-President, in the Chair.

Discussion upon Dr. Harlan's Paper on "Pulpless Teeth."

(*Concluded from page* 345.)

MR. WALTER HARRISON (Brighton) thought Dr. Harlan had hit the right nail upon the head in laying so much stress upon the necessity of care being taken. Dr. Harlan was doubtless a very careful operator, and hence his success. A good deal had been said about cotton fillings ; he did not use them himself, but he believed the cause of their failure in many, if not all, cases was due to the introduction of the antiseptic before all the *debris* had been removed. He was of opinion, that gutta-percha could be sent down curved roots better than gold. Mr. Hern's paper, to which reference had been made, had been of the greatest service to him. He had always exposed his root canals as thoroughly as possible, and had found the Parmley Brown drill most serviceable for this purpose for the upper teeth.

Mr. E. Lloyd Williams could not help being much struck by one fact that was impressed forcibly upon the minds of the members, viz., that they had to deal with, not a pathological state, but a septic condition of the teeth. He held that if any purely septic condition of the dentine presented itself, without anything else to complicate matters, it could very easily be treated with one application, such as iodoform ; if he could be assured that the periosteum was healthy, he should have no hesitation on the subject. One would like to know, when Dr. Harlan talked of blind abscess, at what point he was going to approach it, and how he was going to get his therapeutic agents to act, and where he thought the injection went. Dr. Harlan had stated, he placed a wet dressing up the root canals, then over this wet dressing he put a dry dressing in the pulp chamber, which he covered with gutta-percha. He (Mr. Lloyd Williams) would like to know what part it was supposed this dry dressing would play, for he had no hesitation in saying he believed it would soon become a wet dressing. In treating fistulæ, Dr. Harlan used only a 5 per cent. solution of carbolic acid for injecting the root canals, and the speaker felt surprise that so weak a solution should be employed. Dr. Harlan used tannin in his treatment of devitalised pulps, a practice, the *rationale* of which Mr. Lloyd Williams was anxious to learn, since he was not aware what action an astringent could have upon dead tissues. Dr. Harlan recommended the oil of Gaultherium, and he desired to ask what therapeutic action it possessed. Lastly, there were certain cases when tartar or other foreign material was found upon dead teeth, and this, Dr. Harlan advises, should be removed; if this is done, he would like to know whether fresh bone is formed.

Mr. R. Hall Woodhouse said, that when Dr. Harlan replied, he should like to learn how he destroyed his pulp. He (the speaker) was afraid he was one of those heretics who used a 30 or 40 per cent. solution of carbolic acid on a small piece of cotton wool, filling possibly a third of the fang, completing the operation with chloroform and gutta-percha. He found Eucalyptus oil a useful antiseptic, and creasote serviceable in destroying the pulp.

Dr. Harlan, in reply, said he was pleased to hear adverse criticisms, as well as opinions in accord with those expressed in his paper. Referring to the remarks of Mr. Charles Tomes, he felt sure they would agree with him that in order to protect gelatine or other cultivating material from microbes and their spores floating in the air, cotton wool, whether moist or dry, was commonly used as being the best filter, and so was usually inserted into the neck of the test tube holding the cultivating menstruum. And so, in the case of the teeth, for although the holes in the gutta-percha cap would not keep the cotton wool dry, yet that substance would, although moist, bar microbes from entering the pulp chamber. Mr. Hern did not appear to have followed the portion of his paper dealing with Class Five and disinfectants, for he (Dr. Harlan) distinctly said, that before the essential oil was to be applied, the cavities were to be cleansed with peroxide of hydrogen or corrosive sublimate solution, and then carefully dried. Under these circumstances, cotton soaked in an essential oil was a non-irritating and permanent disinfectant.

He could not agree that simply drilling and reaming constituted disinfection. In reply to Dr. Walker he felt convinced that drilling and reaming root canals would never become universal, although he (Dr. Harlan) agreed that free access to the pulp chamber was important. In reply to Dr. Cunningham's remarks, he would remind that gentleman that he had published eight cases in which the wooden peg had been used for destroying the pulp, and he felt bound to say that six of the eight had threatened to prosecute him, and left him never to return. In using glycerine and tannin, he assured Mr. Lloyd Williams he did so to lessen the bulk of the pulp, since tannin removes the water, and glycerine made the tissues leathery. He found by experience that a 5 per cent. solution of carbolic acid was sufficiently strong for healing a fistulous tract, although Eugenol and other drugs were often recommended. With regard to Gaultherium, he would repeat that at a temperature below the body heat, volatile camphors were given off, which were deposited in the cleansed cavities of the teeth. Gaultherium oil possessed an additional advantage in an agreeable odour. Mr. Lloyd Williams need hardly be reminded that tartar was not found at the apices of tooth fangs, and so his remarks on that head needed no answer. But he had inquired where the injected materials went to, when introduced into cold abscesses, and in reply he (Dr. Harlan) would assure him that sections of jaws in which cold abscesses were present, revealed that there was often a very considerable territory, into which the injection might travel.

The Chairman thanked Mr. Bland Sutton, Dr. Harlan, and the contributors of Casual Communications, in the name of the Society,"

The Meeting then adjourned.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING. March 5th, 1888.
MR. DANIEL CORBETT, M.R.C.S. & L.D.S. Eng.,
President, in the Chair.

The Minutes of the last meeting were read and confirmed.

The President stated that Mr. Charles Vasey had retired from the Society and had been nominated by the Council for election as an Honorary Member. Mr. Vasey had been closely connected with the Society for many years, and had served it in office on several occasions, being elected President in 1876. He felt sure the Society would be glad to accept the nomination of their Council. Mr. Charles Vasey was then elected an Honorary Member by acclamation.

Messrs. J. Royston and W. Matthews, having signed the Obligation Book, were formally admitted to membership by the President.

Professor W. D. Miller, of Berlin, was then elected a Corresponding Member of the Society; and Messrs. Hugh Lloyd Williams, M.R.C.S. and L.D.S. Eng., 6, Harrington Street; Robert J. Lovitt, L.D.S. Eng., of 10, Well Road, Hampstead; and Herbert Apperley, L.D.S. Eng., Chandos Street, W., were elected Resident; and Mr. George W. Watson, of 3, Walker Street, Edinburgh, a Non-Resident Member.

The Librarian (Mr. Felix Weiss) stated he had placed in the Library of the Society the Calendar of the Pharmaceutical Society for 1888, "The Quarterly Journal of Microscopical Science," "L'Art Dentaire," and other periodicals.

The Curator (Mr. Storer Bennett) reported that the Society had acquired by purchase two valuable specimens exemplifying dental lesions in the lower animals. The first was that of a Bonnet monkey (*Macacus sinicus*), which had suffered from rickets, and evidenced very markedly rachitic deformities. The second was that of an Arctic fox (*Canis cajopus*). In this the pulps in the two lower canine teeth were exposed and there was an alveolar abscess at the apex of each tooth. On the left side the abscess cavity was very large, and the jaw on that side was necrosed about the seat of the abscess.

The president then called upon Mr. David Hepburn for his Casual Communication.

Mr. Hepburn asked the Society's acceptance of a wax model showing the peculiar features of a case in which the jaws were in a condition of chronic closure. The patient was a youth aged twenty-one. No movement whatever was to be detected, and the only aperture was behind the first bicuspid on the left side, where there was a gap occasioned by the loss of teeth. In reply to a question from Mr. Smith Turner, Mr. Hepburn stated that the articulation of this patient was similar to that which arose when persons spoke through their closed teeth. He had no doubt the closure was due to the contraction of cicatrices, which were very dense; there was also a loss of bone, and probably ankylosis. The deformity was hidden by the patient's wearing a small black silk protector about two inches long.

Mr. Felix Weiss said a similar case had occurred in his practice, which would be found fully described and illustrated in Mr. Christopher Heath's work on "Injuries and Diseases of the Jaws." The only opening was one caused by the removal of eight teeth. He had in this case fitted a mechanical contrivance which was intended to counteract any tendency to farther contraction. The jaws were rigidly fixed and were not closed by muscular action. Mr. Weiss regretted that the patient had been lost sight of, but promised that if he should report himself he should be brought before the Society. As this case had been so fully described in print, he should not detain the meeting with any further description, but would refer members who desired more details to Mr. Heath's valuable work.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

The last meeting of the session in connection with the Dental Students' Society, was held at 71, Newhall Street, Birmingham, Tuesday, March 27th, 1888.

Mr. J. Humphreys in the chair, and amongst those present were Messrs. C. Sims, W. R. Roberts, W. Palethorpe, W. T. Madin, E. Sims, P. Sims, G. F. C. Matthews, J. E. Parrott, G. Foster, W. Royal, and P. T. Naden.

The minutes of the last meeting having been read and confirmed, were signed by the chairman.

A patient a delicate lad of eleven years was then introduced by Mr. F. W. Richards. Two months ago he had fallen down and fractured the upper right central incisor, driving the upper left central incisor into the jaw, and fracturing the alveolus upon the labial aspect from the central incisors to the left upper temporary molars. The case was treated by removing the temporary canines, which were loose, pressing the fractured alveolus back into its place, after removing the left upper central, which was cleaned and replaced in its socket. The teeth were protected with a covering of gutta-percha for a week, till the inflammatory symptoms had abated, then a model was taken. and a vulcanite plate made to cover all the teeth and the alveolus. This plate has been worn continuously for eight weeks. The alveolus has now apparently joined, and the tooth is firm and has undergone no discolouration, and will probably prove of service for many years.

Mr. W. J. Royal read a paper on "The Salivary Glands and their Secretions," in which he pointed out the anatomical position of the glands, and entered into a description of the chemical and mechanical uses of saliva. At the conclusion, a discussion took place, after which Mr. W. Palethorpe read a paper on "Alveolar Abscess," dealing most exhaustively with the subject, and describing the changes and symptoms from the first formation of the abscess in the apex of a tooth until its complete development. The paper was well illustrated by a number of carefully prepared diagrams. At its termination a long discussion ensued.

At the conclusion of the business meeting, a social meeting took place, at which a large number of visitors were present. Tea and coffee were provided. Songs and recitations were given by the members and visitors. After a most enjoyable evening and a vote of thanks having been accorded to the Chairman, the Secretary, and the gentleman who kindly presided at the piano, the meeting terminated.

NATIONAL DENTAL HOSPITAL. STUDENTS' SOCIETY.

THE last ordinary monthly meeting of this Society was held on Friday, March 2nd, Morgan Hughes, Esq., President, in the chair.

Casual Communications :—Mr. Fripp showed the models of a girl's mouth 20 years of age.

Teeth of upper jaw very small, 2 centrals, no laterals, canines cone shaped, and bicuspids very small; one very small molar on each side.

Lower jaw teeth very small, one molar on left side only.

Chief points of interest:—That two sisters had similar abnormalities. Mouth very good in every other respect, and patients of good physique, healthy, and having no other peculiarities.

Mr. Clark exhibited the models of a mouth, showing transposition between the right lateral and canine in the upper jaw.

The President then called upon Mr. Rymer for his paper on "Dental Mechanics and Limits of Dental Surgery."

Mr. Spokes, instead of giving his own opinions, read a translation, bearing upon some points for discussion on the paper for the evening, from a book written by Monsieur Lecaudey, President of the General Association of Dentists in France.

Mr. Gaddes referred to Dental Mechanics from a scientific and artistic point of view.

Several interesting and animated discussions ensued on Mr. Rymer's paper, in which Messrs. Greetham, Rushton, Fripp, and the President took part.

The President then called upon Mr. Rymer to reply, after which a hearty vote of thanks was accorded to him.

The meeting was then adjourned.

EDINBURGH DENTAL STUDENTS' SOCIETY.

The fourth annual dinner of the Edinburgh Dental Students Society took place March 2nd. in the Albert Hotel, Hanover Street. Mr. George Watson, L.D.S., honorary President, occupied the chair; Mr. David Monroe, L.D.S., another prominent office-bearer, acted as croupier; and amongst others present were a number of the leading men in the Edinburgh dental profession. The toast of the evening was "The Edinburgh Dental Students' Society," in proposing which the chairman pointed to the social, the educational, and the scientific advantages which the Society offered to its members. The Croupier, in acknowledging the toast, expressed the gratification that dental students felt at the deep and well wishing interest entertained by the senior members of the profession towards a society which conferred many advantages, and the success of which was still on the increase. In responding for

"The Edinburgh Dental Hospital" (which had been proposed by Mr. J. Falconer King, F.C.S.), Mr. W. Bowman Macleod, L.D.S., referred to the progress which the Hospital had made of recent years, and expressed the hope that it would be still further extended in its resources, and made one of the first institutions of the kind in the country. "Kindred Societies" and "Dental Lecturers" were amongst the other toasts. In the course of the evening quite an interesting programme of music and recitation was carried through, conspicuous items being the violin solos of Mr. Winram, the songs of Mr. J. O. Sinclair, the pianoforte selections of Mr. Herd, and the more than interesting recitations of Mr. Alfred Leighton.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

A SUGGESTION.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

As you are so impartial in dealing with all questions affecting the profession, I ask you to kindly insert the following in your next issue:—

I would respectfully suggest that the B. D. A. should publish the following (or similar announcement) in the daily papers for three months, with a view to neutralize the degrading effect of so many quack advertisements, pamphlets, &c. The following Licensing bodies, being the only ones appointed under the Dentists' Act in Great Britain, do not countenance advertising or other derogatory practices amongst dentists, viz. :—

The Royal College of Surgeons, England.
" " " " Edinburgh.
" " " " Ireland.
Faculty ot Physicians and Surgeons, Glasgow.

And all the scientific dental societies, in like manner, seek to exclude from membership those who would disgrace themselves by advertising or exposing specimens :—

The Odontological Society of Great Britain.
" Odonto-Chirurgical Society of Scotland.
" The Midland Odontological Society.
" British Dental Association, &c., &c.

I am, Yours &c.,

"One of the many who would join the B. D. A."

Hospital Reports.

MONTHLY STATEMENT of operations performed at the London Dental Hospital, Leicester Square, from Feb. 1st to Feb. 29th, 1888 :—

Number of Patients attended		
Extractions	Children under 14	332
	Adults	976
	Under Nitrous Oxide	1042
Gold Stoppings		510
Other Stoppings		1182
Advice		132
Irregularities of the Teeth		169
Miscellaneous and Dressings		430
Total		4773

JAMES F. COLYER, *House Surgeon.*

Monthly Statement of operations performed at the London Dental Hospital, Leicester Square, from March 1st to 31st, 1888 :—

Number of patients attended		
Extractions	Children under 14	424
	Adults	985
	Under Nitrous Oxide	830
Gold Stoppings		433
Other Stoppings		1133
Advice and Scaling		113
Irregularities of the Teeth		158
Miscellaneous and Dressings		505
Total		4581

JAMES F. COLYER, *House Surgeon.*

Statement of operations performed at The National Dental Hospital from March 1st to March 31st :—

Number of Patients attended		1916
Extractions	Children under 14	298
	Adults	434
	Under Nitrous Oxide	612

Gold Stoppings	180
Other Stoppings	630
Advice and Scaling	310
Irregularities of the Teeth	245
Miscellaneous	189
Total	2818

Frank Lankester, M.R.C.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of December, 1881 :—

Number of Patients attended		920
Extractions	Children under 14	611
	Adults	
	Under Nitrous Oxide	150
Gold Stoppings		62
Other Stoppings		110
Miscellaneous		191
Total		1194

Charles H. Buckley, L.D.S., Eng., *House Surgeon.*

A DEATH AFTER TOOTH EXTRACTION.—The *Sheffield Telegraph* gives an account of an inquest held at Stalybridge upon a child aged five years. The child had suffered from toothache and went to a herbalist, who extracted the tooth. There was a good deal of hæmorrhage, and shortly after the child died "from debility from the loss of blood." Whether the herbalist was in any way to blame for want of skill or carelessness during the operation does not appear in this report, but it is not to be expected that his "profession" qualifies him to deal with the more serious accidents and complications which unfortunately do sometimes occur during or after the extraction of teeth. Surely such a sad case as this should have some influence in deterring the public from patronising unqualified practitioners.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.

3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and be also beg to call particular attention to the importance of a carefully-penned signature and address.

4. All communications relative to subscriptions and advertisements are to be addressed to the Publisher, Mr. J. P. Segg, 289 and 291, Regent Street London, W.

5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

Twelve Months (post free) - - -	14s. 0d.

Post-office Orders to be made payable at the Langham Place Hotel Office, to G. E. Skliros, 289 & 291 Regent Street, W. A single number sent on receipt of seven (penny) stamps.

Communications have been received from:—

Mr. P. F. Nadin, Birmingham; Mr. Wood, Redhill; Mr. Arthur Fagg, London; Mr. Pink, London; Mr. James F. Colyer, London; Mr. J. R. Chambers, Oxford; Secretary Dental Hospital; "Scio"; Mr. Gordon Biggs, Glasgow; Mr. Frank Lankester, London; Herbert, London; Maxwell, Peterborough; Mr. Charles Buckley, Manchester.

BOOKS AND JOURNALS RECEIVED—

Giornale de Correspondenza pei Dentisti; British Medical Journal; Chemist and Druggist; Pharmaceutical Journal; The Western Dental Journal; The Ensign; Glasgow Medical Journal; Le Progrées Dentaire; Revue Odontologique; Southern Dental Journal; The Dental Review; L'Art Dentaire; American Homœopathist; Transactions of the Pharmaceutical Society; Independent Practitioner; Dental Cosmos; Home Rule in Dentistry.

British Journal of Dental Science.

No. 487. LONDON, MAY 1, 1888. Vol. XXXI

ON ACTINO-MYCOSIS, AND THE RELATION OF MICRO-ORGANISMS TO SOME DISEASES AND INJURIES OF THE JAWS AND MOUTH.*

By Frederick Eve, F.R.C.S.,

Assistant Surgeon, London Hospital; Surgeon, Evelina Hospital; Curator of the Pathological Museum of the Royal College of Surgeons.

I acceded with very much pleasure to the request, with which your Secretary honoured me, that I should communicate a paper to this Society; and on hearing from him that the subject would be a congenial one, I selected the disease known as actino-mycosis.

The love of novelty is, perhaps, as strong in the present day as it was among the Athenians, and this applies to science as well as to fashion. The life of the pathologist and surgeon would be comparatively dull were it not that new diseases were constantly coming to light for him to study; or, what is, perhaps, more frequent, if old diseases did not assume fresh aspects from recent investigations. Generalizations in an imperfect knowledge of a subject are often too sweeping, and synthesis groups together diseases which analysis discovers subsequently to be absolutely dissimilar.

This was the case with actino-mycosis, which appears to have been jostled about from pillar to post, having no definite resting-place in the classification of diseases. It has long been known to veterinary surgeons as a disease of cattle, which they called the "worm," probably on account of the circumstance that on squeezing a section of the morbid growth, worm-like masses could be expressed, such as are observed in epithelioma. In later days examples of it were described as lympho-sarcoma; and when occurring in the form of nodules in the internal organs, as scrofula or tubercle.

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* A paper read before the Odontological Society of Great Britain.

I could point out at least three specimens in our museums, so described.

The true nature of the malady was discovered in cattle, in 1877, by Bollinger; and two years later, Ponfick of Breslau established the fact of its occurrence in man. I may briefly state that it belongs to the large group known to pathologists as the infective granulomata, the infective element being a peculiar vegetable fungus, the growth and distribution of which are associated with tumours formed of granulation tissue. The fungus gains access to the body by means of a lesion of some mucous membrane or of the skin. A primary tumour is thus established from which general dissemination may take place by means of the blood and lymphatic vessels, just as in cancer or tubercle.

The jaws and mouth being the parts of human anatomy in which you are most interested, I will endeavour, as far as possible, to illustrate actino-mycosis on specimens from them. This, I am fortunately able to do by means of an excellent series* from the Museum of the Royal College of Surgeons. This lower jaw of a heifer shows well the external form of the disease. It may be seen that there is a general expansion of the horizontal ramus such as might be due to the growth of a central tumour. In the next specimen of a lower jaw a vertical section has been made to show its interior. The bone is expanded and infiltrated by a pale medulla-like substance which is punctated or dotted with numerous minute cavities. It infiltrates widely and in some places has completely penetrated the jaw. The gum on the outer side of the teeth is thickened; and passing down through it into the substance of the bone are two sinuses marked by pieces of glass rod. These lead to the uppermost extension of the morbid growth, and it may have been through one of them that the fungus gained access to the interior of the bone. On pressing a section of the growth, worm-like masses of pultaceous material could be expressed from the small cavities above mentioned. This material, on examination under the microscope, was found to contain large numbers of actinomycetes, as the characteristic nodules of fungus are called. In this case an enlargement of the lower jaw had been noticed for nine months before the animal was killed. No disease in any other part was found. Another specimen illustrates the disease in the upper jaw. It has filled the antrum, and forms a prominent projection on the face. In none of these specimens was there suppuration or ulceration.

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*The specimens from cattle were presented by Mr. A. Lingard, and I described and showed them at the Pathological Society for him in 1886.

There are also two specimens of actino-mycosis in the tongue of oxen. This organ becomes greatly enlarged and elongated, so that it may protrude several inches from the mouth. It is extremely hard and dense in texture, hence, the affection is known as "wooden tongue." The changes in its substance are well shown in this tongue, which has been divided longitudinally. The section is studded with firm, circumscribed nodules, varying in size from minute points to that of a pea ; and often forming lines between the bundles of vertical muscular fibres. Each of these is composed of granulation tissue surrounding a small mass of the fungus.

The connective tissue of the tongue is much increased, especially along the upper border. The characteristic appearances of the disease in internal organs are exceedingly well exhibited by this section of a human liver from the same museum. The cut surface shows several rounded deposits the largest being two inches in diameter. They are yellowish-white in colour, and, owing to the presence of numerous apertures, have a honey-combed appearance. The liver and other viscera had undergone extensive lardaceous degeneration.

The patient, a lad, had previously suffered with symptoms referred to tuberculosis of the genito-urinary organs. There were scars as of tubercle in the ureters, and grey granulations (believed to be miliary tubercles) on the mucous membrane of the bladder. I made the post-mortem on this case in 1881, and believed the disease to be tuberculosis. The microscopic appearances of the nodules in the liver and bladder confirmed me in this opinion, as in the section of the former the actino-mycetes fell out. On becoming acquainted with the naked-eye appearances of actino-mycosis, I at once recognised the true nature of this case ; and on cutting sections of the liver in celloidin demonstrated the actino-mycetes, which had the same structures as in examples from cattle.

The actino-mycetes themselves may be picked out or expressed from the growth. They may also be seen as golden yellow spheres, the size of a grain of sand to a millet seed, floating in the pus from abscesses.

A section of an actino-mycotic tumour examined with a low power shows a number of rounded districts or areas. In the centre of each of these is an actino-myces surrounded by a zone of granulation tissue, or in other words of leucocytes. If the section happens to pass transversely through the fungus it is seen to consist of a central spherical homogeneous or finely granulated material, surrounded by a zone of delicate club-shaped bodies which radiate from it. The appearance may be compared to a composite flower, such as the aster, the closely-applied club-shaped bodies representing the circumferential row of flowerets. The club-shaped bodies are enlarged and rounded at their outer ends, while their central ends become narrow and filamentous; this may in some instances be traced into the central, apparently homogeneous, portion as a fine thread. The fungus appears to increase by the formation of nodular outgrowths from the central mass leading to the production of a group with a mulberry-like outline, or even a radiated mass. A group may also be made up of a number of separate actino-mycetes pressed together. Some observers* have detected by means of special staining agents a network or tangle of fine filaments in the central, apparently homogeneous, part of the fungus, and extending outwards from this between the rays or club-shaped bodies in some instances into the surrounding tissues beyond the limit of the rays. The above are the usual appearances in oxen, and in many cases in man. Dr. Theodore Acland has examined three specimens in man, to the naked eye resembling actino-mycosis, but in which the fungus was extremely different.

In the early stage it took the form of rosettes composed of a number of radiating threads. The larger growths formed a ring of threads, with a hollow centre filled with degenerated cells and threads. These circles expanded like fairy rings, fused together, and formed large areas. Whether this is one of the metamorphoses of the ray fungus, an entirely different disease, or a contamination, cannot at present be determined in regard to these observations. The researches of Hertwig and Owen on a parasitic affection of the muscles of swine prove that there is at least more than one disease produced by micro-parasites resembling actino-mycetes. The fact that Boström and Moosbrugger found filaments in the ordinary form of ray fungus would lend some support to the first-mentioned conjecture. The co-existence of the ordinary form of actino-mycosis with spheres composed of leptothrix-like filaments, either in the affected organ or in some distant part, has been noted by some observers. Baumgarten, in a case of actino-mycosis of the lung, found balls of filaments in the tonsils from which he thought the lung disease was obtained. Roser observed spheres made up of a tangle of fine fibres without any appearance of rays in abscesses connected with actino-mycosis of the neck. On the other hand, as opposed to this view, it is necessary to draw attention to the fact that the smallest actino-mycetes are rayed, and have the same structure as the larger ones. It also suggests the possibility of the infective elements being carried to distant parts in leucocytes.

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* An examination of Moosbrugger's figures suggests that the supposed filaments may be merely a differential straining of the ground substance between the rays.

Clinically this disease in man presents itself under somewhat varying aspects. When attacking the maxillary region it oftens begins with severe pain, localised in one or more teeth, which are frequently carious. A swelling appears about the lower, or less commonly the upper jaw, in the cheek, or near the angle of the jaw. This usually softens and suppurates, the abscesses frequently opening at many points and giving rise to numerous intercommunicating fistulæ. After the lapse of many weeks, or even months, the disease extends to the neck along the anterior border of the sterno-masteid, and may thus involve the whole side of the neck. In some cases it passes upwards over the temporal region. The affected parts are swollen, indurated, œdematous, and, on being opened up, are found infiltrated with a medullary granulation tissue containing the characteristic yellow grains. Occasionally, as in two cases published by Roser, the disease manifests itself as an acute abscess, which may heal after simple incision and scraping.

Extensive and devious abscesses are often formed, extending, for example, in disease of the neck or pharynx, for some distance along the front of the spine. Caries of the vertebræ is slight or absent, but in a case described by Ponfick there was abundant formation of bend (osteophytes) on the vertebræ and ribs. Secondary pleurisy and pericarditis may ensue.

To be continued.

PIVOTS.*

By John A. Biggs, L.D.S.
Lecturer on Dental Mechanics at the Glasgow Dental Hospital.

Mr. Chairman and Gentlemen :—The subject of my paper this evening is Pivots. The title is, properly speaking, a misnomer, as a pivot is defined as a pin on which anything turns ; whereas our object, as Dentists, is to have a pin, which with all its surroundings will be immovable. But use and wont makes it convenient to adhere to the old title, Pivots.

Wrights, when uniting two flat boards, edge ways, use pins driven into holes parallel to each other, and those pins are called dowels; this would be the proper term by which to define what is implied when we speak of Pivots.

Nevertheless, for convenience sake let us adhere to the old term. The art of restoring lost crowns seems to be of very ancient date, probably going back some thousands of years.

Men in all ages have been liable to accidents, and doubtless falling, and smashing the front teeth, would be common enough ages ago as now.

And on the battle-field, where sword and spear and battle-axe were the instruments of war, and men encountered each other in hand to hand combat, it is easy to conceive that opportunity was not wanting for observation on fractured teeth, and to a person of ingenuity what was more natural than that he would be struck with the feasibility of joining the fractured pieces together, by introducing a something into the hole found ready to his hands in the shape of the nerve canal. Besides, we know that they had customs, at least among the Egyptians, which would act as strong stimuants on people who had lost their dental organs to have them restored. For instance, teeth were often extracted from criminals as a punishment, and it is easy to conceive that to avoid the ignominy that might be implied from the loss of a tooth every effort would be put forth to accomplish its restoration.

It is most probable that the first efforts would be merely towards replacing the fractured crown, then, where that was lost or rendered impractiable from other reasons, carving crowns out of wood or ivory as substitutes might be resorted to : then, probably the crowns of animals' teeth were used, and lastly, those of human teeth. And this seems to have been the routine in all ages, and among all people until the year 1774, when it is recorded that an apothecary of Paris made a new departure by endeavouring to construct teeth in porcelain, his name was M. Suctraleau, but not till 1830 was the success achieved, in that direction of any moment. In that year, Mr. Samuel Stockton introduced teeth that for strength, colour, and translucency, far exceeded anything previously attempted, and even at the present day, there are no teeth manufactured which can bear the ordeal of the blowpipe so successfully. Artistically, however, the Stockton are not at all comparable with those of the present day.

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*A Paper read before the "Glasgow Dental Students' Association.

And the improvement which has taken place in pivot teeth during the last 25 years, is a marvel. Then, almost the only tooth used for the purpose was the ordinary tube tooth, now, there are varieties almost innumerable.

Mr. Chairman and Gentlemen, You particularly, to whom much of my subject must be, shall I say, flat, stale, and unprofitable, I beg of you, for the sake of others, to whom much of what I say may be new and interesting. I beg of you, I say, indulgence for thus digressing so far from the actual subject in hand, and shall now proceed to describe some of the methods of Pivoting as practised at the present day.

First, then, it is necessary to examine a root intended to be used for retaining a new crown, to know if it be in a thoroughly healthy condition, and if not, to restore it to that condition first. If the case about to be treated be, say, an upper central incisor, badly decayed, but not so much so as to have encroached upon the pulp, then it were better to take a fine saw or small dividing file, and notch the crown all round the cervical edge, pretty deeply, then, to take a pair of cutting forceps with round blades, place a napkin in the mouth, behind the tooth, and crush the blades together, being careful to be quite steady ; thus, the crown is usually severed from the root, leaving a clean, flat surface, with the pulp exposed in the centre. Cover this over with a very small piece of citrate of cocaine paste, and cap it with paper, leave it for five minutes and then introduce a barbed nerve extractor, rotate it until the nerve be wrapped about it, and then withdraw ; you can thus remove the nerve without the slightest pain and without any bad effect constitutionally. It is often well to wash out the canal with carbolic acid. Slightly enlarge the canal, and plug up the apex with gutta-percha, wood, gold, or any such thing as may make a good reliable plug. Measure very carefully the depth of the canal, and proceed to enlarge it to the size deemed expedient. Some roots, being small in circumference, will not bear to be enlarged to the usual size, and that should always be considered when the canal is being enlarged. The face of the root must now be cut down, in some cases it is necessary to cut the whole root below the level of the gum, cutting it concave, anterio-posteriorly, and very low labially so that the junction of the crown and root may be covered by a small margin of the gum.

Having prepared the root, the next step is to take an impression thus, take a piece of wire, preferably copper, as it has softness, which is not too soft. Introduce it into the nerve canal, and leave it about a quarter of an inch projecting; bend this part of the wire into line with the adjoining teeth, and then take an impression with any of the compounds used for that purpose, or with plaster of Paris, which is by far the most reliable; a tray with a hole through which the pin can project, facilitates the acquiring of accuracy. Having attained an accurate model and articulation, it is then necessary to select the kind of tooth suitable, if a plain tube tooth, let it down carefully in proper situation, taking care that the tube is suitable to the nerve canal, cut a piece of gold wire, fitting the tube and of length sufficient to fit from the apex to the lingual side of the tube tooth, fasten it with sulphur or with soft solder, wrap a few strands of floss silk upon it, introduce mastic varnish into the canal and press into position.

This is the simplest form of pivot it is almost possible to construct, and like shoes, in modern times, sent to the mending, is usually done while you wait. And, talking of shoes, it is surprising how long even this simple form may last.

For a very close bite, a good lasting and artistic pivot may readily be made thus.

Having an accurate model, cut out a small piece of platinum foil, a little larger than the root, punch a hole in its centre open to size of pin, introduce the pin and solder it, now insert it into position on the model and burnish it gently. You can thus obtain a very accurate fit, without the trouble of striking the base plate. Fit a plain tooth, back it also with platinum foil, when satisfied, stick it to the base plate with a composition of wax and resin. I may say, that the addition of a little gutta-percha makes the wax more tough and adhesive. Then insert it in plaster and pumice, and sweat gold of any fineness on to it and build it up, so as to contour it to any shape desired. When cold, dip in warm water to disintegrate the investment; file up, sand paper, stone, and polish it, and you will then have a very pretty pivot.

All porcelain crowns make fine pivots, where it is practicable to use them, but it usually requires a large stock to select from, as you must be guided by so many necessities.

You require a good match in colour, in breadth, in length, in position of dowel hole, and in strength, if you can acquire all these, you have all that can be desired. If fitted carefully to the root (the root being trimmed down to below the gum), with a good strong dowel of wood (hickory) drawn through a draw plate, and inserted the proper length you have a most natural and enduring pivot.

Another method is to cut the decayed tooth down in such a way as to leave the lingual edge standing fully three sixteenths of an inch above the gum and running in an angle of about forty-five to the labial edge, making a gold band to fit the root accurately, then cap it, solder the pivot into it, and proceed in the manner described in case two.

As it may be thought a very difficult thing to fit the band to the root, perhaps it may be better to enter more fully into the minutiæ.

First, then, take a good course corundum wheel on the engine, keep it wet and cut the root, or rather tooth, down to about three-sixteenths from the gum, then take a piece of thin binding wire and encircle the root rather below the gum, twist the wire and when the wire is fairly tight withdraw.

If the wire will not clear itself then it shows an undercut, clear away this until the wire comes off, lay the wire upon a piece of soft lead and then give it a pat with the hammer, you will thus have the exact pattern of the root. Now make a band of gold that will fit tightly and try it on, if rather tight make a wooden mandrila with a slight taper, force it on and that will stretch it sufficiently, if the band fits, then drill down to the nerve, apply citrate of cocaine paste, withdraw the nerve, place a slight pledget of cotton and carbolic acid in the canal, now trim down the root as I directed before, place upon it the band and mark its position and its height and leave it a very little longer. Now cut the root down as before directed. Withdraw the cotton from the canal and plug the apex, insert the pin, place on the collar, and fill with plaster mixed with potash alum to make it set rapidly, when set, remove gently, varnish with copal ether, then slightly oil, and cast a model from it, remove the pin, fit a piece of gold to the face of the root, punch the hole over the canal, introduce the pin, place on the collar when all is satisfactorily adjusted. Secure with black wax, remove and invest it in a mixture of plaster and sand, dry and then solder. The gold should be not less than 18-carat and solder to match.

Now try on, if not quite fitting the cause may be that solder has flown too freely round the edges, if so, the mere chamfering of the edges of the root will suffice. After this is rectified, place in position and fit a flat tooth, back it, secure it in situation with black wax, invest it in plaster and pumice, wash off the wax, solder it and polish. This gives a good workman every opportunity for a brilliant display of mechanical skill. It makes, if beautifully finished, a grand pivot, and is, perhaps, the strongest that can be made. It should be pushed into place with dissolved gutta-percha or one of the oxy-chlorides.

Another method of pivoting is to enlarge the canal to a determined size, then select a tap to correspond, tape the canal down to the apex filling, then chamfer the orifice, and then select a tube with a cross-cut head. Measure the depth of the canal, screw and cut the tube the length desired, and so that the head will be thoroughly flush with the face of the root. Introduce and screw home the tube. Now take a piece of gold or dental alloy wire, file a piece double the length of the tube, so as to be half round, cut it in two, place the one above the other, having boraxed them slightly at one end, tie them with binding wire, then slip between them at the untied end a piece of paper and solder. This will form a very good split dowel and will be readily withdrawn, if this is soldered into a plate to cover the root and then a tooth soldered to it, it makes a fair pivot, but not an extra strong one; the tube occupies so much room in the canal, that in consequence the dowal is comparatively small or weak and liable to fracture. If that occurs, then it is necessary to unscrew the tube and remove the fractured dowel, and then restore the tube again, and that involves one into a good deal of trouble. I, therefore, do not recommend the principle. Although in wasted roots it has its advantages. Again, for wasted roots it is often better to fill with wood, drill it and insert the pivot.

There are also many ways of anchoring fast the dowel to the root, first, and then capping it afterwards. Many try screwing the dowel into the root, which looks a very permanent mode, but is often very disappointing, because it is difficult to form a thread of any depth upon a root without endangering the roots itself. Some writers say it is impracticable, and cannot be done, but I say that is rather too sweeping, as cases do occur where it is quite practicable. The great difficulty is to drive a deep thread upon the interior of the canal, without revolving root and all; but supposing the root to stand above the margin of the gum, then it is quite feasible to place a wire round it, and screw it up tightly, and thereby hold against the force necessary, or drill a hole into the tooth and place an instrument in it, whereby sufficient leverage may be obtained over the root, to resist any tendency to irritate or set up periodontitis.

Anchorage pins are sometimes fastened by undercutting and packing with amalgam.

The objection to that mode is that in the event of any accident occurring to the pivot, the entire work has all to be undone and done again. Yet if a very strong dowel be used, and of the proper material, &c., the risk run is almost infinitesimal.

I think, Mr. Chairman, that although I may not, and really have not exhausted the subject, yet I have said sufficient upon the matter of pivots. If I had not been, by the title of the paper, confined, solely to the subject of pivots, I might have transgressed so far as to wander away into the subject of bridgework. As, undoubtedly, that is simply the outcome of pivoting, or anchoring teeth, but I do fear that your patience will be exhausted. I will, therefore, hasten to a conclusion.

I trust I may have said something to edify, to instruct or amuse. If by any chance I have done all these, I shall be delighted. If even one of them, I shall be satisfied. In any case, I thank you for your patient hearing, and desire you should know it has afforded me much pleasure in preparing this paper for you. I had no idea of giving a paper on such a subject, but as your secretary announced me for it in your syllabus, I accepted the situation and have done my best for you.

EMPYEMA OF THE ANTRUM.*

By G. W. Watson.

At the January meeting of this Society, Dr. Smith made some remarks in regard to Ozœna, and gave it as his opinion that this condition was more frequently than is suspected the result of a pathological condition of the maxillary sinus consequent on the presence in the jaw of diseased teeth; which opinion exactly coincides with my own, the two cases which I am about to bring before your notice bearing strongly on this point.

Case 1. Some 18 months ago a gentleman called on me complaining of toothache. The tooth referred to had quite a superficial cavity in it, which I filled; but on examining his mouth, I found that he had several abscessed teeth in the upper jaw, and noticed a peculiar odour, which I knew to be associated with antral or nasal trouble. I asked him if there was anything wrong with him. He acknowledged that he had been suffering from a discharge of pus from the right nostril, accompanied by severe frontal headache for 18 months, and had been under treatment by an expert, who had, however, done no good. He had also consulted two experts in London, one of whom diagnosed the case to be one of ozœna, the other said there was a tumour in the frontal sinus, which was the origin of the trouble, and would require to be removed. After a careful examination, I came to the conclusion that it was a case of antral empyema, and told him that I thought he could be put all right if he allowed me to remove all the diseased teeth in the upper jaw and make an opening into the antrum. After having consulted his friends and medical attendant, he agreed to be operated on. The condition of patient previous to operation was this:—

Great depression of spirits, severe frontal headache, which was almost constant, the parts over the frontal sinus and superciliary ridges were painful to the touch, and there was a copious discharge of a muco-purulent fluid from right nostril, so much so that if he stooped a drop would fall from his nose; while the odour coming from him was perfectly overpowering, and the sense of smell had almost entirely gone.

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* Read before the Odonto-Chirurgical Society of Scotland.

The patient attributed his condition to a severe chill caught while travelling to London. In presence of his medical attendant, I gave the patient a full dose of nitrous oxide, and removed the first upper bicuspid and molar on the right side, and two teeth on other side also, and made a free opening into the antrum through the socket of the first pre-molar, which I found communicated with the antrum. As a confirmation of my diagnosis, a flow of pus was obtained from the antrum on opening into it, and on syringing, the fluid passed quite freely through the middle meatus into the nose. I moulded a portion of gutta-percha round a piece of iron binding wire, and used this as a temporary plug for the opening into antrum till a proper silver drainage tube could be made. The patient was instructed to wash out the antrum thrice daily with a hot saturated solution of boracic acid. In the course of a fortnight the frontal headache had almost gone, and patient felt very much better in every respect. The patient was told that in all probability it would be a year before he was all right again, and such was the case. In two or three months the pain in region of frontal sinus had entirely disappeared, recurring again slightly later on as a result of nasal catarrh. The syringing of antrum daily, either with solution of zinc chloride or boracic acid, gradually brought the mucous membrane into a healthy condition and a subsidence of the discharge, and about the end of the year of treatment, I removed the drainage tube, and the opening into the antrum closed up in the course of two or three days. At present time, six months, since the completion of case, the patient is in perfect health. I have no doubt that the abscessed teeth were the origin of all those symptoms, causing, in the first place, irritation, then inflammation and alteration of secretion in mucous membrane, of the antrum, and the extension of this inflammatory condition to the nasal membrane, both from continuity of surface and the passage over it of the irritating purulent discharge from the antrum. The pain experienced in the region of frontal sinus, and which, no doubt, misled the London expert in his diagnosis, was, I have no doubt, purely reflex. The most instructive part of the case is, that none of the medical gentlemen ever suspected or even looked at the teeth to see what condition they were in.

Case 2. History.—The patient was a clerk, æt. 42, of rather a delicate appearances. At beginning of last July he was suffering very much from toothache in the upper jaw, and a feeling as if he had caught cold. He went one evening to a flower show, returning home on the top of a tram car. Next day he had a severe rigor, was very sick, and vomited frequently, the illness culminating in nasal and gastric catarrh. This illness lasted for about a month, during which he was attended by his doctor. The right eye became swollen, and was useless for three or four weeks, and the right nostril was blocked by secretion, and continued so till he came into my hands some months later. His doctor took him to an expert in August, as no good had been obtained from douching the nasal cavity. He diagnosed the case to be one of ozœna, and said there were also diseased bones in the right nasal cavity, and recommended the patient to continue syringing the nose with boracic acid solution. He was sent to the country for change of air, and remained away about a month. On his return it was found that matters were still in the same condition, the right nostril quite closed, and a constant discharge of a mucopurulent fluid, accompanied by the usual powerful odour. A week or two after this, the expert noticed a slight bulge of the cheek on right side, and thinking the antrum might have something to do with the condition of matters, told him to call on me. This was on October 22nd. In passing, I may say that the patient himself suggested to the doctor that the teeth might have something to do with it, as they had been so troublesome; but he always pooh-poohed the idea. On examining the patient, I saw it was a case of antral empyema consequent on the presence in the jaw of abscessed teeth. Next day, in presence of his doctor, I gave patient a large dose of nitrous oxide, and removed the second upper bicuspid and first and second molars on the right side, and on a subsequent occasion two teeth on left side, and made a free opening into the antrum through the socket of the second pre-molar. On attempting to syringe out the antrum, I found that for a considerable time nothing would come; but eventually, after using very great force with the ball syringe, a tablespoonful of caseous-looking purulent secretion came away from nostril, some of it of a blackish colour from pigmentation. In spite of this only a small stream of the injected fluid could be forced through the antrum and nose, and he could not breathe through the nostril. However, at 8 o'clock the same evening, he managed to do so for the first time for months. On passing a probe into the antrum, I could detect bare bone on its nasal wall. A silver drainage tube was put through, the opening into antrum being kept in position by a piece of thin gold wire round the first pre-molar, and patient was instructed to syringe through the tube with saturated solution of boracic acid thrice daily, keeping the tube closed with a plug of cotton wool in the intervals. Next day a piece of dead bone about the size of a small finger nail came away from the nostril while syringing, and since then several small fragments have been removed by the same means.

After using boracic solution for three or four weeks with great advantage, I told him to use zinc chloride, two grains to the ounce to begin with, twice daily, and the boracic acid solution once; under which treatment, and the use of tonics, he has rapidly improved, and at the present time (March) the secretion has become very much less, the patient being able to do with only one handkerchief per diem, when he used to require a dozen. The nostril is quite free, and there is no indication of diseased bone, the odour also being very much less. I took a photo-micrograph of a small portion of the caseous pus that came away after opening into and syringing the antrum. This I now hand round. It swarms with micrococci and bacilli. As the case went on, I made periodical microscopic examinations of the secretion, both from the antrum and nose, and found that there were fewer of these organisms each time I examined, and also fewer the pus cells, and more of the normal mucous elements present. This patient was shown to the members.

I may say that I have had other two cases during the year —one where the disease had been going on for five years, the true origin of which, however, had been overlooked by several medical practitioners whom he had consulted. He was put all right after being treated for about three months. The other case was the work of an unqualified practitioner, filling a canine tooth over an exposed pulp,

In conclusion, I would urge upon all who come across such cases the thorough examination of the mouth, the removal of all abscessed teeth, and the filling of all those that require it.

CLEFT PALATE AND ARTIFICIAL VELUM.*

By Mr. J. A. Biggs, L.D.S. (Glasgow).

The case I bring before you on this occasion is one of congenital cleft palate. I may, in passing, tell you that staphyloraphy had been performed on this patient on two successive occasions without any benefit to her whatever. The young lady, aet. 21, is the daughter of a physician of about thirty years' standing in Glasgow. There is no history of any similar tendency in her family. Staphyloraphy having proved a failure on the two occasions on which it was performed, you can readily realise that there was a considerable doubt in the minds of her parents as to the advisability of again calling in the aid of science; but having reached maturity, with this deformity preventing her from making herself intelligible to any but her immediate relations, they ultimately came to the determination to make one more venture on her behalf, to which determination they were aided by the late Dr. Hugh Miller, who advised that she be placed in my hands, with the view of making her an artificial velum.

On examination, I found she had a small contracted superior maxilla, containing nothing worth retaining except the two wisdom teeth; the first bicuspid on the right, and a remnant of the corresponding tooth on the left. The wisdom teeth were small, malformed, almost useless things, and the ravages made upon the left bicuspid by decay rendered it difficult to make much use of it, so that the upper right was all that could be relied on for the purpose of retaining a denture in the mouth. I did not remove a single root, but cut the crown level with the gum; then I made a ferrule to fit the decayed bicuspid, and, after thoroughly filling the root, forced the ferrule up over it, up to and below the gum, and then filled it up with amalgam, and thus made it a good serviceable anchor. I also enlarged the nerve canal of the upper central incisor for the purpose of introducing a pivot, which would thoroughly prevent any unsteadiness anterio posteriorly in the denture. The fissure ran from the pharyngeal walls forward to about one inch and an eighth from the alveolar borders, or opposite the second bicuspid teeth, at which part the width of the fissure was three-eighths of an inch, and gradually widening towards the divided uvola, the two halves of which were about five-eighths of an inch apart; and behind, from the tensor palati of the left to that of the right, was about an inch and a-half, and from the pharyngeal wall to the uvula, about three-quarters of an inch. The anterior and posterior nares were in full view; and also the vomer and the inferior and superior turbinated bones.

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*A paper read before the Odonto-Chirurgical Society of Scotland.

I took an ordinary impression tray and some modelling composition, and procured an impression of the hard palate, reaching back as far as possible, but not allowing the material to flow into a fissure. I then struck up a very light impression tray from block tin, and soldered a handle to it; then added a tray of gutta-percha to its extremity. I then filled with plaster of Paris, placed a wire in the root of the central, and then introduced the plaster. I may here mention that the patient is very delicate, and owing to great sensitiveness, retching was easily provoked. I had to administer stimulants to keep her together, and also to paint the fauces, &c., with dilute phenol sodique, to abate the sensitiveness and retching.

When this plaster impression was set, I removed it, then cut a hole in the tray, containing the plaster impression; and through this I introduced an india-rubber tube, soaped the surface, and returned it to the mouth. An assistant held it in position there. I then pushed the nozzle of a syringe into the other end of the tube, and withdrew the plunger. Another assistant had plaster mixed with potass alum ready. This was poured into the syringe, the plunger was replaced, and the plaster injected into the fissures; then I withdrew the first part of the impression, and, with good strong tweezers, pushed the other part backwards as if down the throat.

Both halves of the impression were then placed in situation and then cast, and to facilitate the getting at either side, the model was also taken in two parts. The model was then sterined, and the fissure filled, and an impression in sand taken, and thus Babbit metal models secured, on which a gold plate was swaged; bands fitted to the bicuspids, and light wires encircling the wisdom teeth, and a wire soldered inte the plate, to fit into the left central incitor.

The six front teeth fitted and backed, and at this stage the whole was fitted into the mouth, and found most satisfactory; they were then soldered and tried upon the model, but the plate, from cause or other, was very badly warped. Probably the assistant had used too heavy an investment—that is, an excess of material, causing a twist that was retained by the solder. This was disheartening, because, with the teeth bands and pivot, it became a difficult matter to recover the fit. There, however, were only two ways for it—either to make a new one or to re-strike that one up again. I chose the latter plan, and proceeded thus :—I placed an iron wire in the pivot root, made up a mixture of asbestos, fireclay, and plaster of Paris, soaped the model, and took an impression, dried, and cast it in Babbit metal.

The pin was easily withdrawn, having been coated with whiting. The front part of the model was covered with fireclay, asbestos, and plaster of Paris, dried, and the lead poured over. This formed a chamber over the teeth and bands of the plate. So the plate, with teeth bands, pivot included, was re-struck, and the fit restored. I have gone into detail, which may seem tedious to some ; but I thought it might be interesting to others, and also instructive to those who did not know of this method, and therefore useful to them if a like contingency should be met with in their practice.

The bicuspids and molars of the lower jaw were all so irretrievably lost, that for the present no cognisance was taken of them, and vulcanite blocks were rivetted on the plate as substitute for the bicuspids and molars.

Holes were now punched in the palate of the gold plate, and a small piece of gold fitted to it, to which two gold screws were soldered, having small nuts working freely upon them. The object of this was to secure a hinge, also of gold, to which was attached the artificial velum. There is a small portion of the fissure covered by the anterior part of the hinge. This was mounted with rubbers to act as an obturator. To the posterior portion of the hinge was adapted the artificial velum. At first my intention was to make this part in soft rubber, but further consideration made me determine to construct it in hard rubber. I believe that far better results may be obtained from soft rubber than is usual if it be packed in a tin mould, and vulcanised in dry heat, as obtained by the new-mode heater. There is, as on cast metal, an impermeable skin compared with vulcanite cooked in steam. But the best cooked soft rubber will not wear so well as plain hard rubber, and will require renewing from time to time. For that reason I determined to make it of hard rubber, which I proceeded to do thus :—I attached the hinge to the plate, placed it on the model, softened in boiling water some gutta-percha, and modelled up the velum. This I cooled, and tried in the mouth, and, after some slight adjusting, I was satisfied with its position and its adaption. Owing to the difficulty of packing it, it was flasked, so that the side parts were capable of being removed like cores, but it was found unnecessary to make use of them practically.

When the velum was finished, it was attached to the plate by the screws and nuts, and tried in the mouth, and the necessary pitch obtained by the raising of the stop pin. This, as you observe, is a contrivance for taking the weight of the case, off the muscles when at rest. You will observe that part of it lies above the natural velum, and part below ; so that when the uvula is raised or depressed, the artificial velum is carried along with it, and thus fulfilling physiologically the purpose for which it was constructed.

I need not point out to you the great difficulties to be overcome by the patient, even after all that is possible has been done. A patient with a congenital cleft of the palate has never been able to pronounce distinctly any words, and but few sounds. Therefore after the introduction of such an instrument, it requires an actual course of training to teach them to pronounce sounds they have never learned to do before, and this patient is no exception to the rule. There is, however, a marked improvement in her capacity to utter sounds, and even already she has learned to repeat sounds she could not imitate at all before. She has only worn the plate and artificial velum a fortnight, and it took the best part of that time to familiarise her with it.

Since writing this paper, I find one of my statements to have been incorrect. The patient's mother, who had been completely invalided for over ten years, had a cousin who also had congenital cleft of the palate.

[Mr. Biggs illustrated his paper at its successive stages by exhibiting the models and apparatus treated of in the text, and then introduced the patient, who kindly allowed an examination of her mouth to be made by those present ; and to demonstrate the effect of the palate and velum, her speech and articulation were tested, firstly without and afterwards with the palate *in situ*.]

MYCOSIS AFFECTING THE PHARYNX.

[*French Association for the Advancement of Science. Congress of Oran. 17th Session.*]

In the medical section of this congress, at its sitting of March 30th last, under the presidency of M. Grasset, Dr. Moure, of Bordeaux, read a short paper on Mycosis of the back part of the throat. This affection, which is still but very little known, was described for the first time in 1873, by Fränkel, of Berlin, next by Boyer Hering, &c., who published cases of this affection. To Dr. Mendos Bonto, of Bordeaux, we are indebted for the most complete description of this disease. The cases published up to the present date number about twenty. From these premises it would appear that the disease is rare; but this must be attributed rather to the fact that the disease is as yet scarcely known, and that it often passes unperceived. M. Moure looks upon it as of very common occurrence. It is met with both in adults and in children. Its etiology is rather obscure, and is that of all chronic non-diathetic affections of the pharyngeal cavity.

Functional symptoms may be altogether wanting, the signs met with are usually those of granular pharyngitis. On looking into the mouth, small projections are seen on the tonsils and base of the tongue, which appear like tufts a few millimetres high. Their surface may be either smooth or irregular, fringed, yellowish-white in colour; they are detached with some difficulty, owing to the penetration of the parasite into the substance of the mucous membrane; their removal causes some slight hæmorrhage. As regards their pathological anatomy, the white tufts are found to consist of filaments of leptothrix buccalis as shown by Fränkel, and subsequently by Ferri. All attempts at inoculation and cultivation have failed.

The prognosis is very favourable, and the diagnosis easy enough, if the practitioner is aware of the existence of the disease. The treatment resolves itself into the tearing or scraping away of the tufts, and in cauterising the point of implantation of the growth with solutions of chloride of zinc (1 in 20 or 1 in 30), lactic acid (50 per cent. or pure); or better still with the thermo-cautery for the tonsils, and the galvano-cautery for the base of the tongue.

DENTAL PRACTICE.

By E. PARMLY BROWN, D.D.S., Flushing.

IT is the province of this Committee on Dental Practice to review such matters of interest to the profession as have transpired in the immediate past.

The subject first deserving of consideration seems to be the Herbst method of inserting gold fillings agitating, as it has, the waters of the dental world : and it being impossible for your Committee to agree on this subject, it becomes necessary that their individual opinions be stated.

Dr. Bödecker, as is well known, has been the champion of this system in America, and he states that he is inserting gold fillings in no other way than by the rotary system. It is the opinion of your Chairman, after having studied the system for about two years ; having seen many clinics by its originator and its most eminent advocates, and having tested the system himself with a set of points presented by Dr. Herbst—the same set he used at the New York clinics—that no first-class work has yet been accomplished by that method ; and although your Chairman is ready to admit that some simple fillings may be very well inserted by that method, yet the instances are so rare where it can be used to advantage over other methods now in vogue that the world would have been no worse off had the system never seen the light of day. Your Chairman refrained from giving expression to adverse criticisms while Dr. Herbst was with us, and before giving the method a fair test as to its merits and demerits, and the whole subject due deliberation. It is the opinion of your Chairman, in short, that gold filling in the human teeth cannot be done by the rotary system up to its present highest standard of perfection.

Dr. Bodecker states that he is using the Herbst obtunder with great success. The obtunder is composed of sulphuric acid containing cocaine, and this supersaturated with ether. Your chairman has tried the obtunder, and believes that in one extreme case of sensitiveness it had beneficial results.

The Perry separator has come, and come to stay, doing much good where properly filling its mission ; but being also capable of doing much harm and becoming in the hands of the reckless an instrument of torture when used where not indicated ! Many days of soreness to the parts about the teeth on which it is used may follow, but skilful work on the part of the operator may in most cases enable him to dispense with extreme separating. The highest degree of skill may be displayed by the best restoration with the least degree of separation, the desired result of close knuckling being equally well attained. Dr. Bodeckor uses the separator after the removal of the matrix to finish the work. The separators are especially valuable where time cannot be had for securing space with cotton ; but your Chairman, however, has adopted the universal practice of late years, of packing cotton between the teeth for a slight separation, which is thereby obtained with the least discomfort of any system that he has ever seen, and at the same time fulfilling the double mission of producing space and driving the gum away from the locality of the work by the expansion of the cotton fibres—a few drops of Calvert's No. 1 carbolic acid and oil of cloves, in equal parts, being applied to the cotton when so used. This medicament assists very materially in obtunding and allaying irritation of the parts. In cases of very close contact, where it is desirable to use the cotton, it may be thoroughly placed by being driven between the teeth with a steel wedge and a hand mallet.

The late birth of the powerful blow-pipe whereby nitrous oxide and illuminating gas are united in marriage, producing the hottest thing yet known to the dental world, and facilitating the use of porcelain and the metals in crown and bridgework, is another advance step in the march of our profession. The blow-pipe has been perfected by the manufacturers ; and the small furnace for baking teeth, in connection with it, we are promised immediately. Although the blow-pipe may be too powerful for ordinary soldering work, yet for supplying heat for the new furnace for porcelain work it promises to prove a great blessing.

After two years' constant use of the E. Parmly Brown porcelain bridgework, your Chairman wishes to say unhesitingly that he believes that he has built better than he thought. In mouths where the gold bridgework could not be tolerated on account of a diseased condition of the gums produced by contact with the metal, the porcelain in contact with the gums is tolerated without the slightest irritation ; but exactly why this is so, the inventor is not as yet prepared to state. Recent examination of several cases inserted over two years ago encourage the inventor more than his most sanguine expectations promised. The anchorage of short bridges into strong, firm teeth, by imbedding the bar running through the porcelain teeth into solid gold fillings, is strong and satisfactory beyond the belief and comprehension of those who have neither done the work, nor seen it done thoroughly; and, further, for natural appearance inside and outside of the arch, there is nothing that approaches it. This system of bridgework may be used in all its varied ways without infringement upon any other patents, and will be withheld from the unprofessional advertisers, being licensed, at a moderate fee, to those who practice according to the Code of Ethics.

Your Committee seem somewhat divided in its opinion of the recently introduced cocaine. Dr. Bodecker pronounces it of no value in the excavation of teeth, but of great service for use on the soft tissues, the removal of deep-seated calculary deposits and necrosed bone. Your chairman found it of no value in the excavation of sensitive teeth until used in connection with carbolic acid and oil of cloves, the cocaine being carefully kept from the margin of the cavity, as the hydrochloric acid in the solution has great affinity for the lime salts in the tooth-substance, enamel or dentine; and he has found by experimentation on some difficult cases of excavation where the sound tooth-substance had to be removed for the anchorage of bridge-work, and the application of these obtundents—cocaine, carbolic acid, and oil of cloves—not only relieves the temporary aching of the tooth (where the rubber dam is applied), but that they soften the tooth-substance, making excavation painless to the patient and easy for the operator until the zone of affected tooth material is removed. Your chairman has found the cocaine very valuable in two other operations of great importance to the dentist. In connection with arsenic where a diseased pulp is to be destroyed and removed in a few days, none of the usual tormenting pains attending or following the application, and also where it is desirable to remove a living pulp immediately—a few applications of the cocaine making the operation painless in a few moments.

It is without great pleasure that your Committee feels compelled to say that the bases for artificial dentures, and the teeth also, are very far from perfection; but your Committee is in possession of facts by which it can promise developments of great interest in another year.

The Perry-Weber dental engine seems to be a great and valuable addition to dental machinery.

Replantation and transplantation seem to have come to life again, and implantation to be a child born to them. Replantation, it is well known, has been successful in but a small percentage of cases in the past; and transplantation in but a very small percentage, and fatal to the patient in too large a percentage to make it a principle of practice. In implantation, Dr. Bodecker says he has little faith as yet. He does not believe a new socket is formed; and he is trying to obtain a section of a socket in which a tooth has been implanted, to examine under the microscope, in which he has not succeeded as yet, owing to obvious difficulties. He promises, before long, a dog's jaw in which a tooth has been implanted, for examination. Dr. Bodecker's opinion in regard to implantation is, that the temporary union between the tooth and the walls of the newly made socket is merely a mechanical cementation, in which opinion your chairman coincides; and he may astonish you by stating that he performed the operation of implantation seventeen years ago when a superior central incisor was implanted in the place of a split "nubbin" of a superior lateral just extracted, because the space was much too wide for a lateral, and the socket had to be considerably enlarged to receive the central. A new socket was thereby practically made. Success was promised at first, but in a year or more the tooth came out suddenly and without any warning, although the root and the surrounding parts were in a healthy condition.

On the subject of regulating teeth, your committee is of the opinion that, as there are various degrees of irregularity, differences in ages, and temperaments of patients, so will there ever be necessary various modes of procedure, and that no one system can ever be universally adopted by the profession.

THIRD FRENCH SURGICAL CONGRESS: ORAL SURGERY.

(*From your Continental Correspondent.*)

THE third congress of French speaking surgeons, viz., French, Belgian, and Swiss, was held in Paris last month, under the presidency of the veteran French surgeon, M. Verneuil.

The meeting proved a great success. Though no special day was set apart for the discussion of oral surgery, it yet received a certain amount of attention. Several papers were read, which may be of some interest to your readers.

The most important were one by M. Ehrmann, of Mulhouse, in which he gave an analysis of the results he has obtained *in plastic operations of the velum palati* in young children. M. Ehrmann has performed 41 plastic operations in children under 10.

In respect of age, he divides them as follows :

Category *a*. Children under 2, ten operations.
" *b*. " aged from 2 to 6, twenty cases.
" *c*. " " " 7 to 10, seventy-one operations.

The result in those of the first category has been to make him decide never again to operate on children under two. He was very successful with the operations in those of the second category, and he had but one failure in children between 7 and 10. It is important that the operation should be performed soon after the second year, so as to avoid having to combat acquired defects of pronunciation. One essential condition of success is the care and treatment subsequent to the operation. This should never be left to the care of assistants.

M. Bories, of Montauban, read notes of a case of an *enormous erectile tumour of the lower lip*, which he had treated and cured. The patient was an adult man, and the tumour of which there was no trace at birth, developed as a result of a contused wound. It was an angioma which showed threatenings of ulceration and of dangerous hæmorrhage. M. Bories treated him with the electric current by electrolysis. The sittings never lasted more than from 8 to 10 minutes at a time ; the needles were inserted at the opposite ends of the tumour. The mass disappeared by the end of the 4th month. The resulting deformity of the lip was relieved by means of the knife.

M. Levrat, of Lyon, described a case in which he performed the *Rizzoli-Esmarch* operation for the relief of closure of the jaws. The patient, a child of 6½, was afflicted with unilateral ankylosis of the lower jaw, the result of infectious osteomyelitis. He was quite unable to separate the teeth. He was fed by means of a tube passed in through the interval obtained by the removal of several of his teeth. M. Levrat performed the following operation. He made an incision along the edges of the jaw, threw back the facial artery, separated the periosteum and passed between the last molar tooth and the ascending ramus of the jaw without opening the buccal cavity. He first removed a wedge of bone by means of a chisel, and then destroyed the periosteum above and on the outer and inner sides. On the eighth day, passive movements were commenced. There was no threatening of reformation of the bone, though the child passed through an attack of scarlet fever during the treatment. The operation was performed a year and a half ago, and the child can separate the teeth to the extent of a centimetre and a half. M. Levrat insisted on the advantages of remaining outside the cavity of the mouth; as it is thus possible to obtain all the advantages of Listerism. The periosteum should be carefully destroyed, and the cutaneous incision be made along the anterior edge of the masseter muscle. In this way there will be less risk of opening the buccal cavity.

The next session is to be held in Paris the first week of October 1889, under the presidency of Baron Larrey. Professor Guyon was elected vice president. It was announced that Dr. Balestreri, of Genoa, had offered a prize of one thousand francs for the best essay on "Treatment of tetanus according to the most recent investigations." The prize will be awarded at the 1889 session, or at the following one, should no memoir of sufficient merit have been received before. Essays should be sent in the Academic form to Dr. Poggi, Secretary General of the Association of French speaking Surgeons, before January 1st, 1889.

DAMAGES AGAINST A DENTIST FOR EXTRACTING A WRONG TOOTH.—The *Weekly Budget* says: A dentist in Pittsburg, who pulled a sound tooth by mistake, has been sued by the man from whom it was taken for 4000 guineas. When it is considered that a whole set of A 1 teeth can be had for less than 20 guineas, the plaintiff does seem a little exorbitant.

British Journal of Dental Science.

LONDON, MAY 1st, 1888.

DENTISTRY AT GENERAL HOSPITALS.

AFTER a lapse of some time this question has again cropped up in the medical press. It is somewhat curious that Mr. Pedley, who has re-opened the discussion, should, after having proposed to address the Odontological Society upon this matter, select a medium for publishing his views, which is purely the exponent of the views of a medical association. What motives may have decided him in his choice, we need not here enquire, but content ourselves with a review of some of Mr. Pedley's arguments. All who read the paper to which we refer, and which we reprint from our contemporary, the Journal of the "British Medical Association" must be struck with the strongly medical bias of the author. If we might be permitted, so to speak, we should say this bias seemed to assume dentistry to be, not a development of medicine and surgery in a particular direction, but a very small section of a very big whole. We deprecate this view most emphatically, for while we advocate that our students should acquire a surgical diploma besides their dental one, we do so in order that they shall be better dentists, and not that they shall become less dentists than surgeons; such a result must be above all things most to be avoided. The gist of Mr. Pedley's paper appears to be that he believes every general hospital should be provided with a dental department; that this department should be served by two dental surgeons each attending twice a week, whose labours might be lightened, if need be, by assistant dental surgeons and dental dressers. The work done would include the operations of conservative dentistry. It is a somewhat ungracious task to look at a gift horse in the mouth, but while we fully appreciate the public spirit which has prompted Mr. Pedley to experimentalise at Guy's, and then publish his experience, we demur to the conclusions at which he would have us arrive, and even doubt the wisdom of the step which has been taken. In the first place, if it be desirable for the general medical student to learn superficially the operative part of dentistry, which we doubt, it is most undesirable that a public charity such as a general hospital should have to look to one of its honorary officers, for money to pay the outgoings in one of its departments; yet Mr. Pedley tells us he "made the additional expenses at Guy's a personal affair." All are agreed that the dental student can never study his profession with benefit to himself in a general hospital, and so, whatever benefits accrue from elaborating a dental department must be for the good of the medical students. These are already overburdened with subjects of examination, and more than this, are at present usually examined in special subjects by specialists, and so are compelled to dive far deeper into their studies than was the case in the halcyon days of Mr. Bob Sawyer and Mr. Benjamin Allen. They are, as a rule, pressed for time and compelled to qualify with as much expedition as may be, and last but not least, they are recruited from "all sorts and conditions of men," and so are many of them not over sqeamish about how they make their living so long as they succeed in making it. It is a good and laudable aim to have to teach the ruck of medical men that the principle of the science and art of dentistry does not end in the acquisition of some finesse in removing aching teeth, but it would be deplorable if the steps taken to further that aim only resulted in giving a smattering of dentistry to the more commercially minded medical students. If it ended in inducing the modern exponent of "cheap and nasty physic," to paint upon his dispensary window, besides the gaudy announcement that "advice and medicine" could therein be obtained for 6d, that Dr. Sawbones was also prepared to scale, stop, extract teeth, erect bridges, do the best American dentistry for equally moderate (?) charges! And yet such we fear is an ever present danger while medical men are admissable to our register, and can find dental surgeons ready to induct them into the mysteries of filling, both plastics and gold. It is a perfectly justifiable criticism to say it is unfair for us to argue from the "abuse" in discounting the "use," but we fear the abuse is inevitable while the use is far to seek. The average medical student is a creature whose reasoning faculties are not above a certain spice of self-sufficiency, and there would be a great danger lest a few months attendance in the dental department of a general hospital would not give him an absurdly excessive idea of his own knowledge of dental science while it induced him to depreciate the skill and acumen of his teachers. In saying this we are aware that we are arriving at a conclusion diametrically opposed to that to which Mr. Pedley and those who agree with him, would have us attain. But we submit such a conclusion as ours is almost inevitable and for the following reasons. To be of general use the cliniques of the dental departments at general hospitals must be attended by the majority of the general students,—if only by the *rar aves*, (like the quondam junior dresser who had attained the full plumage of an F.R.C.S., and of whom Mr. Pedley tells us,) the object set forward is not attained, for the exceptional men, will, if they think it desirable, attend the classes at Leicester Square or Great Portland Street, just as they attend Moorfields and Blackfriars Bridge Road, to study the eye or the skin. If the general students attend the dental department in any but a perfunctory fashion, they must devote a very large amount of time to it, and so be obliged to take the time from other departments, the medical, the surgical, the obstetrical, or the special subjects of eye, skin, ear, &c. That such a deviation from the present routine is inadvisable. needs no proof. But, on the other hand, it is urged that medical men know little or nothing of the *theory* of dentistry, and, for the sake of their patients, it is most desirable that they should learn that teeth can be filled and saved, and that in nine cases out of ten, teeth should not be extracted because they ache. This we grant, but we maintain that this theoretical knowledge can be imparted to every medical student in a far more convenient, less expensive, and in quite as effectual a manner, without going to the expense and fuss of greatly elaborating our dental departments. The dental surgeon who does his duty, delivers a course of lectures and usually finds the "generals" avoid this fund of knowledge—because "they haven't time," but he has other means to getting at his students. He can, and should, give demonstrations, doing the work himself and explaining the why and the wherefore, and at his out-patient clinic he can tell pithily the pathology of the dental lesions presented to him by his patients, explain the proper modes of treatment and the bearing of the lesions upon general medicine and surgery. An hour or two of such out-patient teaching supplemented by a short course of demonstrations held each session, would, we are convinced, answer every requirement as far as the general student is concerned, without taxing to an inconvenient extent the time and patience of teachers and students, and would also avoid an evil which must follow the elaboration of dental teaching at general hospitals, viz., the handing over of the teaching to junior members of our profession. Senior men in busy practice could not devote time alike to their special and general hospital, and juniors, however well read, must lack experience which after all is the salt which savours teaching, and promotes healthful mental digestion and assimilation.

TOO GOOD TO BE TRUE.—It is reported, says the *Preston Pilot*, that a Mr. John Butcher, a dentist in Yorkshire, has discovered a process by which gold and silver can be extracted from old bricks, so that if any of our Lytham readers have any tumble-down old walls or buildings, now is their chance for making the most of them. Mr. Butcher subjects these old bricks, after having been broken up, to a certain chemical process, which we presume is the grand secret of the invention; and it is reported that in a pound weight of this substance, the Government assayers, Messrs. Johnson, Matthey, and Co., of Hatton Garden, London, certify that there was 192 grains of silver, and 7¼ grains of gold; and that another pound and a half yielded 71 grains of gold. Mr. Butcher's address is unfortunately given rather vaguely as "Yorkshire," so that he will not be so easily found, or we might have attempted to obtain some corroboration of this report from the inventor himself.

WHAT BECOMES OF THE DOCTORS?—Sir James Paget has been carefully studying the question "What becomes of the doctors," and reports that of 1,000 medical students whose careers were carefully followed, 23 attained eminence or gained leading practices; 66 had considerable success, gaining more than ordinary influence in their immediate vicinity; 507 were fairly successful, being able to live by their profession alone; 124 had an exceedingly limited practice, and 56 failed entirely; 90 (or nearly one-tenth) abandoned the profession entirely; 87 died after entering practice, of whom 5 committed suicide, and 41 died while at college, most of them of phthisis, though two of them committed suicide. This compilation was made in England; in America the proportion that leave the profession to engage in other pursuits would be found to be much greater.

MR. BLANDY AS A LECTURER.—Mr. H. Blandy delivered a lecture before the members of the Nottingham Y.M.C.A., called "Talk on Teeth." The lecturer, after referring to the necessity of the thorough mastication of the food, explained the construction of the teeth of carnivorous animals, which he compared with those of graminivorous and omnivorous animals, and demonstrated his remarks by a number of skulls. With respect to the attention due to children's teeth, he remarked that they had 40,000 children in the public schools in Nottingham whose mouths and whose health were being utterly ruined for the want of proper care and tooth stopping. The Army Medical Department has now recognised the advisability and necessity of remedial treatment other than by mere extraction, and the Dublin Dental Hospital received a grant from the General Post Office for dental attention to its employés. Mr. Blandy described the construction of the teeth, and showed under the microscope the different forms of dental tubes in the teeth of various animals by which they might be identified. With regard to the human teeth the collection of 4,000 skulls in the Ruskin Museum, Oxford, demonstrated clearly enough the deterioration of the human race of the present day. The causes of this deterioration were pressure of work, drink, bad sanitation, and preventible disease.

NATIONAL DENTAL HOSPITAL OF LONDON.

The Earl of Strafford presided at the twenty-sixth Annual Meeting of the Subscribers to this charity. The reports submitted showed, that although no special appeal for funds had been made during the year, the receipts from all sources showed a slight increase, while the number of cases treated during the year, viz., 39,598, represented an increase of 4877 over those for 1886.

Special reference was made to the fact that the renewal of the lease of a most desirable site had been obtained for the erection of a new Hospital, the present accommodation being totally inadequate to the vast increase in the number of patients which has taken place during the past ten years, and donations were earnestly asked for towards the building.

The Medical Committee reported that great interest had been taken in the fact that Ladies were now admitted to be trained as Students.

Votes of thanks were accorded to the Medical Officers, Treasurer, Committees, and Chairman, and in reply to the last the Chairman spoke of his continued interest in the Institution, mentioning that he had visited the Hospital without notice, and not being recognised, he had an opportunity of seeing it in its every day work, and that he was much struck with the great kindness and attention which was shown to the patients, and the admirable way in which everything was conducted. His Lordship concluded by thanking the Medical Officers, on behalf of the public and himself, for the great voluntary work which they were doing, and hoped for its long continuance.

Advice to Advanced Dental Students.—A correspondent believes the following hints may be of service; we publish them with pleasure, but do not thereby pledge ourselves to all their statements, indeed, we fancy there will be many dissentients from some of them.

On no account do any operation without naming your fee.

Prepare the mouth before doing any operation by scaling and cleaning.

Endeavour to be gentle, but firm.

Remove all decay you can before applying arsenic.

Always get a good separation before filling interstitial cavities.

The acme of dentistry is gold filling.

In treating dead teeth open and remove as much of the septic matter as possible the first visit.

V shaped wedges are the best for keeping teeth apart during operation.

Every operator should have a lady assistant.

Downright sharp chisels, sharp burs and hot air for sensitive dentine.

Enter everything you do into a chart book ; it is invaluable for reference.

Never run bad work down, but take it out and put better in.

The rubber dam should always be applied, even to successfully dressing a tooth.

In putting on " Richmond Crowns," see that you get your pin as long as possible.

Should you advise a " Bar " or " Bridge " case, see that everything is favourable, or you'll get into trouble.

Take great care to impress upon patients the necessity of the free use of the tooth brush.

Remember that whatever you do, do it as well as you can.

You may believe " That foil makes better a filling than any other form of gold.

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

AN ATTEMPT TO CONSTRUCT AN ANTISEPTIC MOUTHWASH.

By W. D. MILLER, Berlin.

The fact that decay of the teeth is of parasitic origin having been once established, we ought to be able, by antiseptic materials, to arrest decay, and prevent its appearance. Many antiseptic mouthwashes now in the market fail in the prophylactic treatment of the teeth. Dr. Miller has instituted experiments to find some substance or some mixture which might be used with impunity in the human mouth, and at the same time be sufficiently strong to effect an approximately thorough sterilization of the same. None of the many mouthwashes at present known, unless we except Listerine, makes even an approach to accomplishing this, the majority of them having at most only a slightly astringent action and an agreeable odour and taste. Probably, Dr. Miller thinks, mouthwash have done more harm than good. The experiments detailed were made with salol, aseptin and acetate of aluminum. *Salol* was first recommended by Sahli as a mouthwash. A teaspoonful of the concentrated alcoholic solution added to half a glass of water gives an emulsion, the particles of which are supposed to be deposited in the fissures and cavities of the teeth, were they exert a permanent antiseptic action. Sahli saw good results from its use in a case of soor, the growth disappearing after a very few applications. Salol although a pleasant remedy, is unfortunately almost useless as a mouthwash, solutions much stronger than the one given above producing almost no action upon bacteria. Aseptin is an antiseptic of low power, compared to thymol, carbolic acid, etc., but is superior since it may be used in much more concentrated solutions. Fifty per cent. solutions (in which strength it may be used in the mouth) have a considerable antiseptic power, and may take the place of water in preparing mouthwashes, (solution No 6.) It does not, however, in combination with other antiseptics, increase their power. If we combine two antiseptics, each of which has a certain action in one minute, it does not follow that the mixture would exert the same action in half a minute, or double the action in one minute. Acetate of aluminum is an old medicament, still adhered to by many physicans; it combines considerable antiseptic power with a very strong astringent action. The strongest solution which can be used in the human mouth had in some cases a marked action, but it eventually proved unsatisfactory. Dr. Miller attempted to combine a number of antiseptics so as to produce the greatest possible antiseptic action, with the least possible action on the mucous membrane. The sensitiveness and delicacy of the mucous membrane of the human mouth excludes the use of all escharotic materials except in very dilute solutions; other materials of great value, such as bichloride of mercury, we hesitate to use through fear that the small quantities taken up by the mucous membrane or swallowed, may produce mercurial poisoning. A third class of antiseptics is excluded, because they have a solvent action upon the teeth, and still others because they have a disagreeable smell or taste.

The experiments were made on the following mixtures:

(1)	Bichloride of mercury	0.025
	Water	50.00
(2)	Water	50.00
	Alcohol	5.00
	Tinct. eucalypt	0.75
	Benzoic acid	0.15
	Thymol	0.0125
(3)	Listerine	25.0
	Water	25.0
(4)	Aseptin	25.00
	Water	25.00
	Alcohol	5.00
	Tinct. eucalypt	0.75
	Benzoic acid	0.16
	Thymol	0.0125

(5)	Water	50.00
	Alcohol	5.00
	Tinct. eucalypt	0.75
	Benzoic acid	0.15
	Thymol	0.0125
	Bichloride of mercury	0.025
(6)	Water	25.00
	Aseptin	25.00
	Salol	5.00
	Alcohol	5.00
	Acetate aluminium	1.50
	Benzoic acid	0.15
	Thymol	0.0125
	Tinct eucalypt	0.75

These mixtures are not mouthwashes. The alcohol was added only as a solvent. As a mouthwash, a solution is needed which acts *quickly*, and which not only prevents the development of micro-organisms while it is acting, but devitalizes them. There are agents which, even in very dilute form, if applied constantly have a powerful antiseptic action, inasmuch as they prevent the development of such micro-organisms as may be present without, however, devitalizing them ; such agents are of no more value as antiseptics in the treatment of the oral cavity than an equal amount of distilled water. It is seldom that anyone in rinsing his mouth will retain the wash longer than one minute, and an antiseptic mouthwash, to be efficient, should be able to devitalize the micro-organisms with which it comes in contact within this short time. Solution No. 5 accomplishes this for nearly, if not for all, micro-organisms in the vegetative form. A solution which devitalizes spores in one minute is out of the question, and, in fact, is not at all necessary, since the conditions which lead to the formation of spores do not exist in the mouth, where we find almost exclusively the vegetative forms. This solution (No. 5) has a decided action in one-fourth to one-half minute ; in one minute the sterilization is nearly or quite complete.

Next to this came the solutions Nos. 6, 4, and 2, in close order ; the addition of aseptin and acetate of aluminium, both of which, but particularly the former, are antiseptics of considerable strength, did not produce the hoped-for increase in the action of the solution. The addition of salol had no effect whatever. These solutions produced a decided diminution in the number of colonies in a half minute ; a complete sterilization usually required two minutes, sometimes even longer. Nearly as strong as these solutions was a fifty per cent. solution of listerine, which also has the advantage of a very agreeable taste and odour. The centres of decay about the teeth are filled with particles of food, and there are not in such cases liquids to sterilize, but solid substances impregnated with micro-organisms ; to determine what effect can we produce upon these by the action of the solutions given above, a second series of experiments was made. Small porous bodies (bread, meat, paper, &c.,) of as nearly the same size as possible, were saturated with solutions charged with certain micro-organisms, or with stale saliva, then subjected to the action of the antiseptic solutions during a specified length of time, and then put into culture gelatine and the number of colonies which developed determined. The stronger the antiseptic and the longer the time of exposure, the less will be the number of colonies which develope in the culture tube. As control, the experiment was repeated, using sterilized water instead of an antiseptic solution. To avoid transferring too much of the antiseptic to the culture tube, the piece is placed for an instant on sterilized blotting paper, to remove the excess of liquid. The results of one of these experiments is given below. In this solution No. 5 was used, and *small* pieces of bread charged with bacteria subjected to the action of the solution 20, 35, 55, 70, 90 and 120 seconds respectively. The control tube developed 4,500 colonies :

Tube	1.	(20	seconds,	action)	developed	420 colonies.
„	2.	(35	„	„)	„	46 „
„	3.	(55	„	„)	„	250 „
„	4.	(70	„	„)	„	13 „
„	5.	(90	„	„)	„	1 colony.
„	6.	(120	„	„)	„	remained sterile.

The result of the experiment is, however, very clear. When large compact pieces were used (as large as a pea, for example), such as may sometimes be found in cavities of decay, it required as much as ten to fifteen minutes to effect a complete sterilization. Hence even such a powerful wash as the one under consideration will accomplish but little in sterilizing the human mouth when the centres of decay are stuffed full of food. This is also the reason why excessive smoking, notwithstanding the fact that tobacco smoke is a powerful antiseptic, does not insure the teeth against decay; the smoke passes over the surface, but does not penetrate to the point of action. It follows that the use of the mouthwash should always be preceded by the thorough use of the brush or toothpick, removing at least all larger particles of food and opening the spaces between the teeth, so that the wash may penetrate to the vulnerable point. If this is conscientiously done, solution No. 5, and, in a less degree, in the other solutions specified, acts a powerful means of preventing excessive decay. The solutions, 2 and 5, may be made use ot in the following form:

No. 2.	Thymol	0.25
	Benzoic acid	3.00
	Tinct. eucalypt	15.00
	Alcohol abs	100.00
	Oil of wintergreen	25 drops.
	Or oil ef peppermint	20 ,,

In use, enough of this mixture is added to a mouthful of water to produce a decided cloudiness. The wash, no doubt, may be rendered softer and more palatable by the addition of glycerin, of katechu or something of the kind.

No. 5 is prepared in the same way, with the addition of 0.8 bichloride of mercury.

R. Acid thymic	0.25
——benzoic	3.00
Hydrarg. bichlorid	0.80
Tinct. eucalypt	15.00
Alcohol absolut.	100.00
Ol. gaultheria	gtt. xxv.

The strength in which the bichloride is used in the mouth is about $\frac{1}{5000}$, and consequently, even if a minute quantity were swallowed, no injurious effect would be likely to ensue.

Literary Notices and Selections.

HOW TO REFORM THE DENTAL DEPARTMENTS OF OUR HOSPITALS.

By F. Newland Pedley, F.R.C.S. and L.D.S.,
Dental Surgeon and Lecturer on Dental Surgery in Guy's Hospital.

This is a problem I took in hand at Guy's Hospital, and now that the experiment has resulted well, and nearly two years have been allowed to lapse as a time-test, I bring the matter forward in the hope of inducing other hospitals and other dentists to adopt necessary changes.

I do not advocate that each medical school should be a school for dental students ; at present this is impossible. Let dental students seek special training at special hospitals, but those who hold the dental surgeoncies to hospitals should show their operations and the scope of their subject as the other specialists do. The status of dental surgery, though improved, is far from what we would see it, and from what we think it deserves. What can be more damaging to our profession, which, above all, rightly claims to be a branch of surgery, than the lamentable fact that medical men so frequently feel obliged to admit utter ignorance of the subject. Hence it becomes a frequent source of complaint amongst dentists that the importance and value of their work is inadequately appreciated, and the medical fraternity is blamed for possessing little or no knowledge about teeth. The work done at the dental hospitals is admirable, but busy medical students cannot give the time to attend there, and they go into practice with the idea that the extraction of teeth and their replacement artificially, form the limit of our practice and science.

The fault lies with those dentists connected with hospitals who do not take practical means to dissipate this illusion. The position of ophthalmic surgery would not be what it is if the eye surgeons treated every hospital case by excision of the eyeball. The schools would condemn such teaching as a barbarous exhibition of bad science.

If each hospital dentist devoted one sitting a week to extractions, and one sitting to the other operations of dental surgery, the difficulty would be overcome. No one is called upon to treat all the diseased teeth of his district, but it does not follow that nothing whatever should be done or taught. I do not consider two sittings a week too large a demand upon the time of those who occupy the responsible position of connecting link between dentistry and surgery.

I will now briefly run over the arrangements made at Guy's Hospital. There are two dental surgeons' dressers; they hold office for two months. A fresh dresser is appointed each month, who becomes "senior" during his second month of office. The dressers attend daily at 12.30 to see out-patients. In very urgent cases they are at liberty to give "gas," but of course the administrator must be a qualified man. General practitioners are very frequently asked to give "gas" for dentists, and it is to be regretted that they so often find themselves lacking in practical knowledge upon this subject.

At first I had to do nearly all the extra work of the new department myself, owing to the absence of my then senior colleague, Mr. Moon, but of late I have had the assistance of a present student, Mr. Wynne Rouw, an ex-house-surgeon at the Dental Hospital of London. He attends on Tuesdays at 1.30. and 1 on Thursdays at the same hour for out-patients, and these are our afternoons for gas extractions and surgical cases. Nitrous oxide gas should be given as a matter of routine in our severer operations, and in the numerous cases where the health of patients renders them physically incapable of enduring pain without severe suffering. An anæsthetic so safe should always be at hand, and is more suitable for many patients in the wards of the hospital than ether or chloroform when a tooth has to be removed. On Friday afternoons at 1.30 we both work, doing anything except extractions. It is on this afternoon that we see patients under treatment for fracture of jaw and children wearing regulating plates, and we frequently have cases where plates are required to restore parts removed by operation for surgical diseases. All such patients are supplied with mechanical appliances and plates, for which the hospital pays the senior dental surgeon £40 a year. I am informed that this sum represents an equivalent fixed by Mr. Salter. The rest of our time on Friday is devoted to "stopping." including gold.

It is a mistake to suppose that medical students are not interested in even tedious operations. I have had abundant proof of how keen an interest they take in our work, and have been astonished at what good men apply for dental surgeon's dresserships. At one time I had an ex-house-surgeon as senior and an F.R.C.S. as junior dresser. Advanced students do not require much teaching, and I am not sure to what extent their services might not be available in filling simple cavities with "plastic" stoppings. That aspect of the subject I will pass over as "not proven." Suffice it to show what work can be done by two dental surgeons, and how. The time may come when we may be able to cope with all the decayed teeth that require attention, and I will admit that the question is one of national importance, which may some day effect the supremacy of the Anglo-Saxon race, and I quite sympathise with those who would demand State aid for dental hospitals, and that in the army and navy, and wherever medical supervision is provided, salaried dental appointments should be invariably added. But at the present time these considerations must be deferred, and what dentists have first to do is to educate the medical profession, and through them the laity, in the merits and bearing of their science.

Those who are opposed to these suggested changes in our hospital practice plead that they could not devote the time to the increased work. In the first place, I only suggest two attendances a week for each dental surgeon, and one cannot say that is an excessive claim on their time, or that it reaches the average period spent in the hospital by the dentist's colleagues. Granted, metropolitan schools are undermanned as regards dentists. Such important hospitals as London, St. George's, University, King's and Charing Cross, have only one dental surgeon each. If these need aid they can ask that assistant dental surgeons should be appointed. There are young men available for future appointments ready to devote part of their time to a hospital, and to rise thereby in a way usual amongst members of a staff. If possible, the "assistants" should hold independent appointments, as at Guy's. The *Medical Directory* shows that there are in London 86 "hospitals" and 67 "dispensaries." Some of the latter are very large, and one shows an annual attendance of 24,000 patients. We know it is the exception for a London hospital or large dispensary to be without an appointed dentist. This gives an idea of what could be done if each dentist attended twice a week, and reserved part of his allotted time to operations other than the extraction of teeth. It is a noteworthy fact that some dentists hold two appointments, and I may be permitted to add that I resigned my post on two hospitals in order to devote adequate attention to one.

The matter of necessary funds should be considered, although, to avoid probable delay and obstacles in what had something of the nature of an experiment, I made the additional expenses at Guy's a personal affair. Accepting £40 a year as the equivalent of the "artificial work" done, I should estimate the cost of the "gas" for the past year at £50, and the instruments, stoppings, etc., about £30, Thus I judge the expenses of the department are at present about £120 per annum. With the result of my experiment I am satisfied, and do not desire any alteration of existing conditions as affects myself; but I am of opinion that, when new dental appointments are made by hospitals requiring efficient dental departments, the cost of the instruments, materials, etc., should be defrayed by the institutions benefitted. If the dental surgeons were to express willingness to do the better work and the hospitals were to decline to provide the expenses, the onus of bad dental departments would be entirely thrown upon the authorities. But there is now a great competition amongst the hospitals, each vying with the other as to which shall have the most complete administration and the best teaching, and as they undoubtedly wish to improve their dental departments, I have yet to learn that they will demur to furnishing the means. At St. Bartholomew's all the working expenses are supplied at the cost of the hospital, and an annual sum of £250 is divided amongst the four dental surgeons appointed, made up thus: the Treasurer pays £50 a year to each senior, and £25 to each junior; and the school pays an additional £25 a year to each of the four. On the one weekly occasion when each senior attends, he is assisted by his corresponding junior, and between them they see twenty or thirty patients, and they do what they can to preserve some of the teeth at this sitting by stopping. Having so many patients to see, many of whom require gas, it is obvious that little can be done in the way of stopping. I recently made a formal visit to St. Bartholomew's on the day when my friends Mr. Paterson and his junior, Mr. Ackery, were sitting. They did not profess that their stoppings done under such conditions were up to the standard of their work in private practice, and no gold fillings were attempted. Each assistant also attends three times a week for extractions. The assistant dental surgeoncies are dependent appointments.

There is, of course, an advantage in numerical strength, though it leaves them still hopelessly unable to cope with even a small percentage of their cases. And there is this drawback: such a corps could not expect to be placed on the staff of the hospital, and, in fact, no dentist at St. Bartholomew's has a seat on the staff committee. The number seems to me more than sufficient for the requirements of a general hospital and school for medical students, yet insufficient for a dental hospital and school for dental students. Such a staff of dentists could well afford to keep their extraction cases separate from their other operations and could then do their best work. They are, however, utterly unable to give dental students the practice and teaching offered by the dental hospitals, as a cursory visit to one of those institutions will show. Yet, London, St. Bartholomew's, and some other hospitals have the right to sign-up dental students for the dental practice required by the College of Surgeons. This privilege, if ever exercised, imposes a grave responsibility on the dental department of such a hospital. London Hospital, in its Calendar, says: "The attention of dental students is particularly directed to the fact that the Council of the College of Surgeons recognises the dental department of the London Hospital as a school at which may be obtained the dental practice necessary to qualify a student for the examination for the dental diploma."

In the foregoing sketch I have tried to show how a creditable dental department can be carried on by two dental surgeons, and at very moderate cost. Doubtless other hospitals will take the matter up, and will see that dental surgery is duly represented amongst the special branches of surgery.—*Journal of the British Medical Association.*

Reports of Societies.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The Annual General Meeting of the Society—Session 1887-8—was held in the Rooms, 30 Chambers Street, Edinburgh, on Tuesday the 13th March—W. Williamson, M.D., President, in the chair.

Mr. Wells proposed that the office-bearers should be re-elected for the ensuing year.

Mr. Munro seconded the motion, which was put to the meeting, and carried unanimously.

The Treasurer (Mr. Watson) handed in his report, which showed an income of £29 8s derived from subscriptions, entry-money, and interest on bank account. This, with a balance of £5, 0s. 1½d, carried forward from the previous year, and a deposit receipt of £105, made a total sum of £140 2s. 9½d. After the deduction of expenses, which included rent of rooms, books, stationery and printing, &c., &c., a balance of £3 18s. 3½d. was left, which, with the deposit above referred to, gave £108, 12s. 3½d. as representing the total funds of the Society.

The Curator and Librarian (Mr. Durward) acknowledged the receipt of "Foster Flagg on Plastic Filling" from Dr. Waite, and also "Notes for Dental Students on Anatomy and Pathology," from its author, Mr. James Rymer. Some plaster casts, showing supernumerary teeth, from Mr. Finlayson, and some marked specimens of eroded teeth, from Mr. Mackintosh.

The best thanks of the Society was also due to Mr. Gaddes and the British Dental Association for the copies of their journal, which were sent gratuitously. As there were a large number of periodicals lying unbound, it was decided, at the Librarian's suggestion, that they should be severally bound in yearly volumes for easier reference.

Mr. Campbell moved that, in order to facilitate the attendance of non-resident members, the session of the Society should commence in January instead of November—the meetings continuing until May.

The question gave rise to some discussion—it being held that April and May being finer months, and more pleasant for travelling than November and December, a better attendance from those who live at a distance might be anticipated. In the end it was put to the meeting that the change should be tried, and the motion was carried unanimously. Minor details which the alteration would effect—notably the date of the annual dinner—were referred to the Council, which would meet previous to the commencement of the session to discuss and arrange matters.

Mr. Patrick Walker (Dundee) exhibited a No. 7 S.S.W. Handpiece, showing an arrangement to arrest its tendency to revolve, a movement especially unpleasant, when the mallet is attached. A bolt has been very neatly fixed to the swivel point, and a stop point peg to the handpiece. When the bolt was pushed forward it caught upon the peg, and the revolution of the handpiece thus prevented.

Mr. Walker also exhibited photographs of the "Hastie" engine as applied for workroom purposes, driving the polishing and grinding lathes, &c.; and also of the Webber Pulley and 4 feet "Poised" cable and sheath, for the ordinary purposes of the dental engine, driven by the same motor, the valve of which was controlled by a system somewhat resembling that of railway signalling. The weight of an ordinary cable and sheath, with a No. 9 handpiece on an S.S.W. engine, was 7 ozs., or, in the hand, 3¾. This he contrasted with the poised 4 feet cable and sheath, which, with a No. 7 handpiece, weighed 12 ozs., and, in the hand, 1¾,

Mr. Campbell said it was unnecessary for him to speak much upon this subject, as they were all by this time pretty well aware of his views. He had seen and admired the simple and efficient method Mr. Walker had adopted for conveying power to his surgery, produced by the water-motor in an adjoining room by means of a wheel and pulley, and a cord running along the lower part of the cornice. This they would see in the photographs attached to the poised cable over the operating chair.

Mr. Durward said that after being accustomed to the use of the Hastie motor for the last six months, he finds that it would be almost impossible to get on without it, and would have no hesitation in advising all members of the profession, if they want comfort in filling operations, to invest in one, and he would also add a Greenfield's stool as well.

Mr. G. W. Watson exhibited two photo micrographs taken with 1-15th inch oil immersion lens. The first one demonstrated very well the numerous organisms present in a dirty mouth—micrococci, bacill, spirillai, and bacteria being well shown. The second showed a portion of carious dentine, the tubules being distended and packed with micrococci. Two other micrographs were also exhibited, taken with lower powers, demonstrating a well marked growth of leptothrix buccalis upon a small portion of carious dentine.

Dr. Smith asked if Mr. Watson had ever seen any of the smaller spirilla in diseased dental structures, as had been alluded to in a recent lecture by Professor Cossar Ewart.

Mr. Watson had not seen spirilla in the distended tubules, but could readily understand that they might occasionally be found there.

Mr. Macleod said that, when over in America last August, there were two things which took his fancy as illustrating the ingenuity of their American confreres in utilising ideas, and the patient painstaking manner in which they elaborated details and finish in their tools. These two things he now had the pleasure of introducing to the notice of the Society—viz., Knapp's Nitrous Oxide Blowpipe, and Rishel's Automatic Vulcaniser. The first was perfect in its way, and would be found most useful in the laboratory where the dentist did the finer part of his metal work. In our own country, Mr. Hunt, of Yeovil, had 19 years ago utilised No.2. in melting, soldering, &c., but to Dr. Knapp belongs the merit of devising and constructing a most ingenious, elegant, and simple apparatus for its convenient and economical use. Mr. Macleod demonstrated its power.

[*Extract from published paper on Nitrous Oxide.—Yeovil, Feb.* 1869.]

To men who are often obliged to melt their own gold scraps for making gold plate, I thought some discoveries of mine would be useful, so many being in the possession of the apparatus for making nitrous oxide.

After experiments with this gas as a convenient substitute for oxygen, used as a blast through the flame of a spirit-lamp on a ball of lime, for obtaining a brilliant white light in the mouth, I thought I might use the flame for heating purposes, as it would probably be *intense*, and also well *under command.* I found it so answer my expectations, that I could easily run down a couple of ounces of 18-carat gold ; and from the ease of melting, I concluded I could readily melt a much larger quantity.

I then substituted for the flame of a spirit lamp, a Bunsen's gas jet, which I made to burn horizonatally. An ordinary blowpipe was introduced into the middle of the gas jet, connected by elastic tubing with my gasometer ; weights were placed on the top of the gasometer to compress the gas.

On turning on the gases, the mixture of coal gas and NO_2, produced a small, conical, pale white flame, before which gold runs down like wax. I considered this jet valuable also in oxidising any impurities in the gold which I melted upon charcoal. I found the quantity of nitrous oxide consumed trifling.

The above is an extract of a paper of mine published in the

British Journal of Dental Science, March 1869. This was before the days of liquid gas; and now results can be obtained better by having as much pressure as you want, and also by the union of coal gas and nitrous oxide *within* the jet just before the gasses issue, thus obtaining better combustion in the Knapp blowpipe from the results I obtained so many years ago. I have the highest opinion of this blowpipe for practical purposes in the hands of dentists.—Pen Villa, Yeovil, March 10, 1888—W. A. Hunt, L.R.C.P. Lond., &c.

The Rishel Vulcaniser, which automatically closed the flasks when the rough-packed rubber was at its softest, and thus secured immunity from cracked blocks or displaced teeth, was also a very ingenious and compact instrument. It consisted of an outer chamber for the generation of steam, the upper part of which was contracted by an annular swell and rubber washer. In this outer chamber was a hollow piston chamber in which the flasks were placed unclosed. The generation of steam in the outer chamber forced the piston chamber upwards, bringing the flasks in *pressed* contact with the floor of lid of the vulcaniser, and closing them most effectually. To properly understand the working of this machine, diagrammatic illustrations are required, which may be found in some of the dental journals or had from the Welsh Dental Co., Philadelphia, U.S. Mr. Macleod pointed out a weakness in the present issue of the "Rishel"—viz., the thinness of the bottom of the piston chamber, which rendered it liable to bulging in the event of the safety disc of the outer chamber giving way. He also suggested that it would be much improved by the attachment of a steam guage.

The President hoped that Mr. Macleod would next session report further on Rishel's vulcaniser and Knapp's blowpipe as to their real practical value in the workroom.

The President then called on Mr. G. W. Watson for his paper upon "Empyema of the Antrum. [See page 410.]

Referring to Mr. Watson's paper, Dr. Smith said the cases recorded were very instructive as typical instances of this affection. It was difficult to open the antrum, as a general rule, through the socket of any tooth anterior to the second bicuspid, because there the floor of the antrum did not sink so low as above the molar teeth. Where pus was discharged at once upon the extraction of an upper molar, it did not always imply that the apex of the fang had penetrated into the antrum. It was more likely that pus had been secreted between the bone and the strong periosteum and mucous membrane covering the interior of that cavity—which often occurred in the same manner as in sub-pericranial abscess. The opening of the maxillary sinus into the middle meatus was one of a nature very apt to become obstructed, as was shown in one of Mr. Watson's cases. It was in these cases that the antrum began to bulge, and in which most pain was felt. Perforation of the antrum might be performed either through the socket of a tooth, or by removing a portion of the outer wall above the alveolar ridge, or as Miculicz proposes, from the inferior meatus, but this last was occasionally difficult. Opening into the antrum was not invariably required, however, in cases of discharge from that cavity, if it came away freely by the nose; as in many of these cases it arose from the irritation set up by diseased teeth, which being removed, the other symptoms disappeared, Sometimes the irritation extended from the antrum to the other sinuses in connection with the nasal cavity, by the mere continuity of the lining membrane, and upon removal of the antral affection these became improved also. It was not necessary that the teeth occasioning antral disorders should be the teeth more immediately connected with that cavity, as he had seen several cases where antral discharges had seemed to depend upon teeth situated in the front of the mouth. The closing of the opening made in perforating the antrum, in whatever way it was done, varied considerably in the time it took to become obliterated. It was probably in the cases which had been alluded to, where the pus was situated between the bone and periosteum, and where necrosis was likely to occur, that the most marked foetor of the discharge existed, and where the closure of any opening made was more protracted.

Mr. Campbell said that some years ago a lady patient who had been under Mr. Watson's treatment for disease of the antrum came to reside in Dundee. Mr. Watson had sent him a full description of the case, and requested the lady to put herself under his care. He merely continued the same treatment, or rather requested the patient to continue syringing as she had been doing, showing herself from time to time, that the progress of healing might be ascertained. In two or three months the tube was removed, and the case terminated very successfully. He had treated one or two cases on the same lines as those described by Mr. Watson, and with very satisfactory results. He considered the form of tube used by him, and the fact of having it secured to an adjoining tooth, and thus allowing free syringing without displacement, most important matters in the successful treatment of these often troublesome cases.

The President said the cases brought forward were extremely interesting, and showed how prone the ordinary medical practitioner was, to omit the dental aspect of such cases, and to fly to various abstruse theories as to the cause of trouble. As regards the position of the opening into the antrum, the alveolus was generally the most convenient, and the use of the tube prevented premature closure. He had had a case lately of a young medical man, who had what seemed to be mucous engorgement of the antrum, dilating the outer and palatal walls. The teeth were in a satisfactory condition when first seen, but later on, the pulp of the first molar became exposed from his having neglected it. The tooth was removed, and the palatal root was found very much absorbed, and the opening into the antrum was obtained through its socket. After a time the opening closed, and the antrum again filled. This time an opening was made through the external plate, at a point over the position of the second bicuspid. The patient made a very ingenious little contrivance to effect drainage, and also to keep the opening patent and to allow the cavity to be syringed. He took a little bit of wire, embedding the end in gutta-percha, and placed it in the slight space between the second bicuspid and the second molar, which had moved forward. To the other end of the wire he tied a short piece of a fine flexible catheter, one end of which passed into the antrum, and the free end opened into the mouth. This appliance was perfectly comfortable, and answered every purpose. He might add, that, in this case, there was no opening into the nose.

The President then reminded the members that, as Mr. Campbell's motion came into force the following session, the Society would not meet again until January, 1889; and after so lengthened a retirement, they might surely look forward to some practical outcome in the shape of papers, and he trusted that any incidents in practice, or observations suitable as subjects for casual communications, should be carefully recorded, that a valuable accumulation might await them at the re-opening of the session.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I quite agree with your correspondent, "One of the many who would join the B.D.A," in his suggestion, and I would advise also that the B.D.A. should add to the same announcement a list of the combinations of letters which have a meaning, L.D.S., D.D.S., M.R.C.S., M.D., &c., and expose the fraud of those who pretend that they have a qualification, which their neighbours, who might be carrying on their profession in a respectable way, have not by putting after their names R.D.S.

I once saw an advertisement of a dentist, who put after his name, *L.D.S. sine diploma.*

Some of those who put M.D. and were prosecuted, lost the day, in spite of their defence that it implied Mechanical Dentist.

I am, &c.,
A. N,
London, S.E.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

At the April Sittings of the Dental Board, the following Candidates passed the respective Examinations:—

First Examination—James Duncan, Glasgow.

Second Examination (and admitted Licentiates)—Richard J. Hall, Hanley; Wm. Hutchinson, Glasgow; James P. Thomson, Glasgow.

APPOINTMENT.—Mr. Charles H. Smale, L.D.S., has been elected to the post of House Dental Surgeon to the Victoria Dental Hospital of Manchester, vice Mr. Charles H. Buckley, L.D.S., resigned.

DEATH.—Mr. J. G. Whyte, of 34, Dundas Street, Glasgow, died a few days since.

Hospital Reports.

Work done at the Victoria Dental Hospital of Manchester during the month of March, 1881:—

Number of Patients attended		895
Extractions	Children under 14	565
	Adults	
	Under Nitrous Oxide	111
Gold Stoppings		73
Other Stoppings		160
Miscellaneous		209
Total		1118

CHARLES H. BUCKLEY, L.D.S., Eng., *House Surgeon.*

British Journal of Dental Science.

No. 488. LONDON, MAY 15, 1888. Vol. XXXI.

NEW GROWTHS OF THE UPPER JAW AND THE RESULTS OF THEIR OPERATIVE TREATMENT.*

By Professor E. Küster.

The primary tumours I have met with in the upper jaws are as follows :—

Carcinoma	... 20	cases
Sarcoma	... 14	,,
Adenoma	... 2	,,
Fibroma	... 2	,,
	38	,,

I shall begin the consideration of these neoplasms with the fibromata.

Fibromata are found in the upper jaw in two situations, either the alveolar process, or on the nasal wall of the upper maxilla, *i.e.* the pterygoid fossa, in the posterior portion, therefore, of the bone. Fibromata of the alveolar process usually occur in the form of pedunculated periosteal tumours, which are usually reckoned among the epulis class ; at other times as larger tumours with a broad base which may grow against the antrum of Highmore, just like the sarcomata. More than 17 years ago I published a case of this kind, which had been sent to me from Bethanien.† A far more important form is the so-called naso-pharyngeal polypus which starts in the majority of cases from the base of the skull, and in its growth downwards comes to be intimately connected with the wall of the upper jaw ; this forms the classical type of polypus, because it ends by being bound by several roots to the surrounding tissues. As Langenbeck* has shown, they may, however, spring from the pterygoid fossa, and it is impossible to tell in such cases, whether the upper jaw or the palate was the seat of the tumour. In some cases it must be acknowledged, it is a matter of the very greatest difficulty to tell, during the operation, or during a subsequent anatomical examination which was the starting point of the disease; in the following cases we shall look upon the tumours as belonging to the upper jaw on account of their attachment to that bone. I have only met with two cases of this kind in 2 boys of 13 and 14 respectively, for as you know these tumours only come under observation during the growing period of the body. At the time they were admitted both children were in a very anæmic condition on account of repeated hæmorrhages. One succumbed soon after the resection of the upper jaw, which was not sufficient to allow of the entire removal of the tumour, so extensive were its attachments, the cause of death being apparently the great loss of blood. In the other case, I performed an osteoplastic resection of the maxilla according to Langenbeck's method; thirteen months afterwards, he returned with a very extensive recurrence of the tumour, and the operation was repeated. This boy is still living, but he has lost one eye, which became the seat of tubercle soon after the first operation, and suspicious symptoms have occurred quite lately, which make me suspect a further recurrence.

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*Abstract of Paper read before the Gesellschaft für Heilkunde, on January 18th, 1888.

† Kuster: Chirurgisch-Onkologische Erfahrungen Langenbecks Archiv, XII.

Among the more uncommon forms of tumours of the upper jaw may be reckoned adenomata. They do not usually start from the upper jaw, but from the mucous membrane of the turbinated bones which is so full of glands, from thence they have a tendency to affect the mucous membrane of the nasal wall of the upper jaw, or even the antrum. This is what happened in both my cases, more especially in the second, where the whole of the mucous membrane of the antrum was converted into a diffuse tumour which consisted of nothing but glandular tubules. As with time these tumours are likely to become converted into carcinomata an early and radical removal would appear called for in such cases. In both instances I removed the whole of the upper jaw, and the cure has been permanent. I shall show you both these patients this evening, and you will be able to see in what a satisfactory condition they are.

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* L. Langenbeck. Medic. Centralzeitung, 1860. Deutch Klinicke, 1861.

The two following groups of tumours, sarcomata and carcinomata, are of far more importance, on account of their greater frequency. Statistics differ as to which of the two groups is the more numerous. According to O. Weber and König, sarcomata are more frequently met with, but on the other hand, Gurlt* found that of 16,000 cases of tumour, in three of the large hospitals of Vienna, 125 were cancers, and 96 sarcomata. My own small numbers show a balance in favour of the former, 20 cancers to 14 primary sarcomata, which would give a rather smaller percentage of sarcomata. It should be observed, however, that neither of these statistics include a very common form of sarcoma of the upper jaw, namely, the sarcomatous epulis, the periosteal giant celled sarcoma, for they never cause a fatal termination, and as a rule they are treated in the out patient department, and not in the wards. If these were to be included, I have but very little doubt that the number of sarcomata would very nearly approach that of the carcinomata.

One point has struck me, and that is, that besides the 14 cases of primary sarcomata, I have also met with two metastatic sarcomata, once after the removal of a sarcoma of the arm, which had developed from a cutaneous wart, and had led to the amputation of the arm three years previously; and in another case a few weeks after the extirpation of a scapula for a periosteal sarcoma. In both cases, the tumour of the jaw showed the same structure as that of the primary tumour. As far as I know, this recurrence of secondary sarcoma in the upper jaw had not as yet been observed. Naturally neither case was submitted to a further operation, and both patients soon succumbed.

Sarcomata of the upper jaw most frequently start from the alveolar border and especially from the periosteum. They occur, as a rule, in the form of a so-called epulis, which, in almost all cases, without exception, shows the microscopical characters of a giant-celled sarcoma. These tumours which seldom exceed in size a hazel-nut or even a walnut, are comparatively benign, for they seldom recur after the excision of the affected portion of the alveolar process. They may, however, grow from the alveolar border into the antrum, and form extraordinarily large and far reaching tumours; the largest sarcomata of the upper jaw which I have observed have been cases of giant-celled sarcomata. It is doubtful, however, whether all such large sized sarcomata do start from the alveolar border, or whether they may not possibly spring from the interior of the bone as central giant-celled sarcomata. That other portions of the bone may be the starting point, is well shown by one case in my list of giant-celled sarcomata, in which the new growth had originated in the hard palate. Hüter's * statement to the effect that sarcoma of the upper jaw, is usually of the small-celled variety, of a specially malignant type, must be altogether rejected; he appears never to have seen any giant-celled sarcoma of the upper jaw.

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* Erfurlt. Langenbeck's Archiv. XXV.

My fourteen cases of primary sarcoma may be divided into the following groups.

I. Giant-celled Sarcoma.
  1. Of the alveolar process, (epulis) 5 cases.
  2. Of the hard palate, ... 1 ,,
  3. Of the body of the maxilla 3 ,,
II. Small or spindle-celled sarcoma of the upper jaw, 5 cases.

The whole of the nine cases of giant-celled sarcoma, were cured by one operation, five by the resection of the alveolar border, one by the detachment and removal of the diseased involucrum of the hard palate, 3 by a total resection of the upper jaw. The fact of the perfect cure of the three last cases by one operation, though they had already attained a considerable size, is certainty worthy of notice.

Far different, however, was the result in the second group the malignant sarcomata of the upper jaw.

The five cases were treated by total resection; of these, two succumbed as a direct result of the operation, the three others had recurrences of the growth; some were operated on a second time, but all fell victims to the disease, and in a comparatively short time, in a few months after the last operation.

The result in the case of the carcinomata was quite as unfortunate.

Of twenty cases of this kind, nineteen in hospital, and one in private practice, five died as the immediate result of the operation, which consisted in the total removal of one

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* Hüter, Chirurgie, II. 1 Anflage, 1882.

maxilla in 17 cases, and of both in one, and in two other cases in the partial resection. The causes of death was septic broncho-pneumonia (due to foreign body) in four cases, in one hæmorrhagic gastro-enteritis, perhaps, though doubtfully due to mercurial (sublimate) poisoning; of the remaining fifteen patients, not one is alive now; one died within six months, in a Moabite asylum, and all the others have been operated on several times, but all, with the exception of a woman, succumbed to the recurrence. The woman was alive a short time ago, but she had a return of the growth. In some the recurrence occurred very rapidly, so that no more than six months elapsed from the very beginning of the symptoms; in the other cases there was an interval of from six months to two years, before the tumour recurred. In one case only five years and a half elapsed before the growth appeared again, and here the patient, a woman, lost one eye on the first occurrence, and the second as a precursory symptom of the return. She was still alive in this state a short time ago. She was, however, in a tolerably satisfactory condition for some years.

The following table gives the final.

			Died from the effects of the operation	Permanently cured	Living, with a recurrence of tumour	Died from the effects of recurrence	Died from some intercurrent disease
1.	Fibrous neopharyngeal polypi	2	1		1		
2.	Adenoma	2		2			
3.	Giant-celled sarcoma	9		9			
4.	Malignant sarcoma...	5	2			3	
5.	Carcinoma	20	20		1	13	1
	Total	38	8	4	2	16	1

Let us consider again the final results. Of 38 new growths which underwent operation, eleven only were permanently cured, five by means of a total, and four by a partial resection. Eight succumbed as the immediate result of the operation, in five cases of carcinoma, two of sarcoma, and one of nasopharyngeal polypus. One case of nasopharyngeal polypus is still alive, but with a return of the growth, though it has already been operated twice by means of an osteoplastic resection, and one case of carcinoma is also still living. One patient with carcinoma of the upper jaw died nine months after a total resection from an intercurrent disease. The whole of the remaining sixteen cases, in thirteen of carcinoma, and three of sarcoma, have all died from recurrence of the growth after repeated operations.

The above figures give a far from pleasant picture of the results of operation in such cases. They are, however, not special to myself, for all surgeons have met with similarly unpleasant results. The immediate mortality after resection of the upper jaw, for tumours, would appear to be still more unfavourable, for König * puts it down as according to Rabe, at 29 per cent. against 27. 5 per cent. in my cases ; as for permanent cures in cases of malignant growth, we only find solitary examples. It is easy to understand, therefore, why surgeons look upon these affections with a certain resignation, for as Hüter, who certainly could not be called a timid surgeon at all with his knife, says of the operation : "It is customary to make an attempt at extirpation by resecting the jaw, but recurrence is the rule, and a return of the growth is but a poor result for such a scientific and dangerous operation. In fact it would not be surprising if surgeons were to give up operating in cases of malignant tumours of the jaw, and were to allow the patients to die without being operated upon ; very exceptional cases, however, show that recurrence may be retarded or remain altogether absent, and thismay in a certain sense, justify the operation which the surgeon, however, may be forced to undertake by a despairing patient.

And though figures seem to prove Hüter right, I cannot put myself in the same stand point as he. I must, in connection with this matter recall Virchow's † again recently repeated saying :—" If cancer is, at its very onset, and oft for a long time afterwards, but a local affection it

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* Konig Specielle Chirurgie I.

† Virchow zur Diagnoses und prognose des Carcinoms.

must be possible at this period to cure it locally." Virchow certainly is mistaken, when he states that surgeons cannot boast very much of their operations for cancer, for even in cases of cancer of the breast, no more than 9 per cent. of permanent cures can be reckoned upon. For Volkmann has obtained 17.8 per cent. of permanent cures, I myself 21.,5 per cent. and Von Bergmann, according to a statement by Rotter, though the cases have been observed for too short a period, has reached to over 32 per cent. These figures to my mind, do justify us in boasting, more especially as it is impossible not to see that the percentage of cures is increasing. I will give another example of this.

In 1873 at the Congress of German surgeons, when the subject of carcinoma of the tongue came up for discussion, the renowned surgeons present could only bring forward three cases of perfect cure, and cancer of the tongue was, therefore, looked upon as one of the most malignant forms of carcinoma, since then, however, the records of perfect cures have increased in number, and at the present day, there are but very few surgeons who could not bring forward some case of cure. I might increase the number of examples, but those I have given will be sufficient to show that we should not altogether be without some hope in cases of carcinoma of the upper jaw, as well as in sarcoma.

There are two circumstances especially which lead me to hope that our future results will be still more favourable. The first is that, as long ago remarked by Billroth, * carcinoma of the upper jaw appears only to affect the lymphatic glands at a very late stage. In fact out of my twenty-five cases of malignant growths in only one is a swelling of the glands recorded, and that was in a very peculiar form of periosteal fibro-sarcoma, which covered part of the face exactly like a mantle. It must be remembered in connection with this fact that the lymph from the upper jaw, has to get over a barrier before it reaches the deep cervical glands. This barrier is constituted by the deep facial glands, which lie partly on the posterior aspect of the buccinator muscle, and partly on the lateral wall of the pharynx, and which may escape the exploring finger even when they are swollen, owing to their being so deeply situated. It is, however, an astonishing fact that even in cases of diffuse and extensive carcinoma, I have never

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* Billroth, Allgemeine Chirurgische Pathologie & Therapie.

observed any swollen glands either before or during the course of the operation.

The second fact to be considered, is what is well shown in the literature on the subject, namely, that the easily recognisable forms of cancer, *i.e.*, those of the alveolar border, and the involucrum palati, offer a comparatively better prognosis. It is true that the two cases which I have met with both ended fatally, but both were the subject of partial resection only, and that I now hold to have been a mistake.

These thoughts lead me now to consider the methods which must be followed in order that we may obtain more favourable results than we have hitherto done, both with regard to cancers and sarcomata. If we look round about us to see how more favourable effects have been obtained in other parts of the body, we find that at the bottom of it lies improvement in the methods of diagnosis which renders an early recognition of the tumour possible as well as an early and as extensive an operation as possible. No surgeon can hold a different opinion on the latter point; the most difficult portion of the whole question thus remains, the early diagnosis, and all the more difficult, as this lies, not with a surgeon of experience, (specialist) but with a general practitioner who usually lacks experience in the matter owing to the comparative rarity of the affection. I may, on that account, refer to the more important symptoms, as I do not share the oft expressed opinion that tumours of the upper jaw especially are not to be recognised at an early stage.

Superficially placed tumours of the alveolar process and of the hard palate of course do not offer any difficulty as regards diagnosis, in fact it is as a rule easy enough to tell at once whether they are of a benign or malignant nature. The benign giant-celled sarcomata can be recognised with certainty by their brownish green colour which can be seen to glitter through their outer membranous portion, while cancers are separated by the fact that at a very early period they show ulceration. Difficulty in diagnosis arises only in the case of deeply lying tumours, especially those of the antrum, in which it takes a long time for the growing tumour to affect the bone and thus attract attention.

I attach great weight to two symptoms, early pain and hæmorrhages. With regard to the first, it usually occurs as a form of neuralgia of the trigeminus either in the first or second branch or in both simultaneously. These neuralgic pains are of far more frequent occurrence than is usually supposed to be the case. It will often be found that the patients have had all the teeth removed in the affected half of the jaw, and without any improvement. If together with this, we also find purulent catarrh of the corresponding half of the nose, the suspicion of disease of the antrum increases, but we need not, however, be dealing with a new growth. In many cases, however, pain is altogether absent; malignant sarcomata thus as a rule develope painlessly, not seldom also do carcinomata. A second symptom is the early bleeding from the nose. If this symptom occur without any cause in a man who never suffered from bleeding from the nose before, and if the most careful examination of the nasal cavity gives no clue to the source of this hæmorrhage, and if this bleeding occur frequently it must be looked upon as exceedingly suspicious. A repeated examination of the nose may give some clue, as by it we may make certain that the blood does not come from the turbinated bones, but from the lateral wall of the middle nasal meatus.

If the whole of the jaw begin to increase in size, the disease has already reached a very advanced stage, in certain cases, however, especially in the case of sarcoma, we meet with localised swellings, which start from the bone or periosteum and really cause but very slight swelling of the facial or orbital wall, the latter with slight deviation of the ball of the eye, which may at a very early stage give rise to double vision. A comparative examination of both orbital borders will, as a rule, show considerable projection of the orbital plate. All these symptoms do, I must admit, not point with absolute certainty to the existence of a tumour; but if once the suspicion of a new growth has entered your mind, I look upon an exploratory incision as not only justified, but also as absolutely called for.

You will occasionally make up your minds to act in this way if you begin by making an exploratory puncture; under certain circumstances it may be a deep one. I use a hypodermic syringe for this purpose, which I pass from the the mucous membrane of the mouth through the facial wall of the jaw and also through the hard palate. If the bone is sufficiently soft to allow the needle to pass through, the suspicion is almost raised to a certainty; for a softening of the bone to this extent appears to be specially confined to tumours of the jaw. Not long since I thus diagnosed a tumour of the upper jaw which turned out to be, when the antrum was opened, a mass of mucous polypi entirely filling the cavity. Thus benign as well as malignant tumours are sufficient to bring about a softening of the bone, apparently as a result of the congested condition of the osseous tissue. You must not forget, however, that with age bones atrophy and become very soft. Occasionally on withdrawing the piston we manage to bring away a particle of tissue which we can submit to a microscopical examination. But even without that the opening of the antrum from the mucous membrane of the mouth is called for, and it should be sufficiently large to enable the cavity to be examined with the finger. I was thus in a position to recognise at a very early stage a diffuse adenoma of the jaw and to cure it by operation. If once we have arrived at a diagnosis we should never rest satisfied with partial operations; a tumour of the antrum just as one of the orbital or facial plate, calls in every case for a total resection; malignant tumours of both the hard palate and alveolar process should also be operated by total resection.

To many this proposal will appear too radical a process, because they are afraid, not only of the danger of the operation, but also of the great deformity which they believe to be the unavoidable consequence of it. As a matter of fact the danger is, as I have already stated, great; the question, however, comes to be whether it cannot be reduced.

The eight deaths which occurred in my cases of total resection, may be attributed to the following causes.

Putrid broncho-pneumonia... ...	4
Anæmia	2
Exhaustion from repeated metastasis	1
Gastro-enteritis hæmorrhagica (Sublimate poisoning)	1

Death in the last case but one hardly depended upon the operation, though this may have somewhat hastened it. The last case might possibly have been avoided by a more careful use of the sublimate of which the patient, an old man, undoubtedly swallowed a quantity. The two cases of death from anæmia occurred in patients in an especially miserable condition and already brought low by repeated losses of blood; in fact one, a young servant girl, the subject of a malignant sarcoma of the jaw, would most likely have succumbed immediately after the operation, had I not taken the precaution to keep her head dependent during the operation. I must, however, strongly dissuade you from operating in this position, more especially for total resection, as the bleeding is far freer than when the head is raised.

The large majority of my unfortunate cases were due to putrid broncho-pneumonia, which is generally admitted to be brought about by the aspiration of putrid fluid secretions of the mouth. It is especially old people, the usual bearers of cancers, who are in danger in such a case. Long continued plugging of the air passages is the only measure that I know of against this accident. In the present day, every surgeon before resecting a jaw, plugs the trachea by means of either Trendelenburg's or Hahn's canula; but neither can be kept in for any great length of time, or else they cause sloughing. It is advisable, therefore, immediately after the operation, to introduce an ordinary tracheal canula, and to plug the air passages above lightly with iodoform gauze. But the change of canula must be effected while the head is still dependent, otherwise the blood collected above the tampon-canula will be sucked in by the unconscious patient and it will give rise to suffocation. The omission of this precaution nearly cost one of my patients his life; the danger was only avoided by hastily sucking out the blood from the air passages.

Some surgeons are quite as afraid of the deformity which they believe to be inseparably connected with a total resection of the jaw as of the danger to life itself. These deformities may depend upon two factors, on the one hand on paralysis of the facial nerve, more especially of the branches for the orbicularis palpebrarum, on the other, on the loss of the hard palate together with the involucrum. With regard to the latter, it is one which we are often quite unable to avoid, as the new growth has already attacked the involucrum; but the loss is so completely made up for by an artificial plate supplied with teeth that the patient feels no discomfort either in talking or in swallowing. In all cases, however, where it is possible to do so, it will be well to detach the involucrum palati according to Langenbeck's method, so as to join it to the cut edge of the mucous membrane of the cheek. Healing takes place as a rule without any difficulty, and the patients improve at once in their powers of speaking and swallowing. It has also seemed to appear to me as if in this way healing took place more rapidly, and as if the danger of broncho-pneumonia was in a great degree thus lessened.

Of far more importance, however, is the preservation of the branches of the facial nerve, especially of those for the orbicularis palpebrarum, and this can be easily accomplished by proper incisions. Velpeau's curved incision, which reaches from the zygoma to the angle of the mouth should be carefully avoided, as also Langenbeck's method, in which the incision also extends in a broken line from the nasal aperture through the cheek as far as the zygoma. Both cut through a number of branches of the facial nerve, and give rise to ugly raised scars in the cheek. Dieffenbach made an incision along the bridge of the nose into the nasal cavity, and prolonged it from thence through the middle of the lip, and finally from the upper end of this incision he made another at a right angle as far as the middle of the lower border of the orbit. Wilms improved the incision by making one angle follow the naso-labial fold, and then dividing the lip and prolonging the upper end of the cut from the orbital edge to the middle of the zygoma. Most of the branches of the facial for the closers of the eye are also divided by this incision; if the incision be carried only as far as the middle of the orbital border, sufficient room will not be obtained for a proper examination of the temporal fossa into which the tumour is apt to grow after ulcerating through the maxillary wall, and there will be great danger of portions of the new growth being overlooked and left behind. For years past I have adopted a modification of the Dieffenbach—Wilms, method by continuing the upper incision only as far as the middle of the lower orbital border, from whence it runs in a curved direction to the lower edge of the zygoma in the middle of which it ends. The field of operation is in this way altogether distinct, but the deformity is slight as the branches of the facial to the orbicularis are not injured in the least.

I will now give you a description of the way in which I operate in a typical case.

1st stage. Tracheotomy and plugging of the air passages by means of either Trendelenburg or E. Hahn's canula. To make the closure perfect I am in the habit of passing a sponge fixed to a thread, from above downwards into the larynx.

2nd stage. Incision through the cheek and raising of the flap from the bone. If the facial plate of the upper jaw is healthy we can keep quite close to it; but I have never attached much importance to the preservation of the periosteum. The cheek must be separated as far back as possible in the region of the tuberosity of the maxilla so as to make the final extraction of the jaw so much the easier.

3rd stage. Incision of the involucrum palati; a knife introduced on the inner side of the hamular process surrounds this bone by means of a curved incision which is then continued along the alveolar border to a little beyond the middle line behind the incisor teeth: The separation is made exactly like in a case of uranoplasty, by means of an elevator. This is, of course, possible only in those cases in which the palate is not affected by the growth; in other cases the involucrum must be sacrificed and divided in the middle line. At a very advanced age the involucrum becomes sometimes atrophied to such a degree even when the palate is perfectly healthy that it tears quite readily and it is impossible without the very greatest care to effect the separation at all successfully. Atrophied flaps of this kind are badly nourished and they sometimes slough away either in part or even altogether; for this reason we should not attempt to be over conservative in the case of old people. When the separation is complete the hinder border of the horizontal portion of the palate is shaved off with a knife; the nasal portion of the velum palati is thus cut through and entirely separated from the bone.

4th stage. Separation of the periorbita (periosteum of the orbit) and division of the malar bone. The periorbita is cut through close to the lower edge of the orbit and it is then raised for some distance with an elevator; this is easily accomplished. The separation is continued towards the outer side until the instrument reaches the inferior orbital fissure. The fibres of the masseter are then separated from the lower border of the malar bone to a sufficient extent for the handle of the knife to reach the fissure with ease; an aneurysm needle is then passed through with a thread attached, which serves to draw a chain saw; the malar bone is then divided in the middle by means of this.

5th stage. Division of the palate and of the remaining portions of the upper jaw. It is best to use a straight saw for this purpose. In order to obtain more room, one of the incisor teeth is then removed, and the nose is separated by means of a knife, from the osseous circle of the pyriform aperture. The saw is now thrust through the lower nasal aperture until it reaches the posterior wall of the throat, the left forefinger is next inserted behind the velum palati to protect it, and the palate and alveolar process are then sawn completely through. The saw is turned round so that its teeth loop upwards, and placed against the border of the apertura pyriformis; it is advisable at this stage, for the operator to stand behind the patient, and to pass his arm round the head of the patient, while an assistant holds up the periorbita, and protects the eyes, the frontal process of the upper jaw and the lacrimal bone are then sawn through in the direction of the skin incision, and the saw being held more horizontally, is worked through close to the lower edge of the orbit until it arrives at the inferior orbital fissure, and it is then found on the cessation of all resistance that the whole maxilla has been cut through.

6th stage. Removal of the jaw and arrest of the hæmorrhage. The last cut of the saw divides the infraorbital artery, but the bleeding is usually not very violent on that account, because the vessel is half torn out. It is, however, advisable to get through this last stage as rapidly as possible, on account of the very free loss of blood which the patient has usually lost already. An elevator is inserted in the fissure in the malar bone, another one in the nose, and with one sudden jerk the jaw is raised outwards, while an assistant compresses a sponge into the bleeding cavity. It often happens if the bone is penetrated by the tumour, that it breaks into several pieces. The remaining muscular shreds are divided as quickly as possible with scissors and the jaw is removed. It is an easy matter now to seize the infraorbital artery and other bleeding vessels in the large cavity, and to pass a ligature round them. It not seldom happens that the palatal bone has not been sawn altogether through, and that the posterior maxillary wall remains after the breaking. If the case is one of benignant tumour, the remaining portions of bone may be left without troubling about them; but in other cases these portions of bone, so far as they belong to the upper jaw, must be separated with a few blows from a chisel, and removed. It is very desirable to preserve the palate bone, when the involucrum palati has been retained, for by removing this portion of bone we shall forcibly divide the branches of the descending palatine artery, and this will endanger the nutrition of the periosteal flap. A proper examination of the wound now follows. It often happens that a branch of the tumour extends towards the temporal fossa. Both must be removed as carefully as possible, with forceps and scissors, which is seldom a difficult thing to do, as these portions are usually sharply separated.

7th stage. Closure of the wound. The involucrum palati is first sewn from before backwards by means of button sutures of catgut to the cut edge of the mucous membrane of the cheek in such a way that the bleeding surfaces lie in apposition ; a few button sutures of silk are thus inserted so as to bring the facial flaps into their proper place, and the two edges of the wound are then carefully joined by a continuous silk suture. Before finally closing the wound it is plugged with iodoform gauze, the extremity of which is passed into the aperture of the nose, the mucous membrane of the lips is also carefully brought together by a continuous suture of catgut. The edges of the wound are then painted over with iodoform collodion, even the sutures in the mucous membrane.

8th stage. The tampon canula is replaced by an ordinary canula and the trachea above the tube is stuffed with iodoform gauze of which the end is made to project outside over the canula. This last part of the operation is only done when the head is dependent.

By carefully following out these rules the deformity will be slight. The cheek flap at first hangs, it is true, like a wet sail in front of the defect, but in the course of a few days it is full and plump again ; it becomes thinner, however, in the course of time, and the process of cicatrization has the effect of drawing it somewhat towards the defect. The cheek never sinks in to such an extent as to make the defect very remarkable. The interference with speech, mastication and swallowing caused by the loss of the hard palate are easily remedied by a well fitting plate of india rubber provided with artificial teeth.

Certain disadvantages of a very important nature accompany resection of the upper jaws, and of these I must say a few words. I allude to the danger to the eye and ear on the corresponding side. I must impress you all the more with the importance of these drawbacks as the handbooks and treatises say not a word or only refer to them quite incidentally.

The eye is found to alter its position at once if we find ourselves compelled to remove more than half the lower orbital plate or even the periosteum and part of the fatty tissue. The whole globe sinks and is drawn outwards, the most favourable result of which is an ugly deformity with double vision ; the two images do not simply stand close to one another like in cases of paralysis of some of the ocular muscles but in different horizontal planes altogether. The movements of the eye are also impaired to no slight degree by the altered level of the attachment of the ocular muscles. It is far worse, however, when the sight is lost altogether in the sunken eye, and this may sometimes be found immediately after the operation when the patient wakes; the sight seldom returns in such cases. But even when the sight is still retained, great dangers still threaten the eye. The eye may gradually and slowly become amaurotic without any visible changes occurring in it, with the exception, perhaps, of the pupil becoming dilated. At other times, a few days after the operation a central corneal ulcer is found to have developed, and when once present mydriatics and antiseptic pressure bandages can it is true, retard its progress, but they are quite powerless to stop it altogether. The process thus results sooner or later in perforation and total destruction of the eye. In such cases, I have proceeded as soon as possible to enucleate the eye, and thanks to the antiseptic method I have never had any mishap with the other eye.

If you are quite persuaded of the existence of this danger, you will, of course, endeavour to reduce it to a minimum. It is most important not to sacrifice any more of the orbital plate than is absolutely necessary. In all cases, therefore, where this piece of bone is not certainly affected, be the growth of a benign or malignant nature, the section of the bone must be made immediately below the orbital edge; it is always possible in this way, if the bone has a suspicious appearance to remove a sufficient portion of it. If the eye sinks, an attempt must be made by carefully plugging the cavity to raise it again. This process has a most beneficial effect both immediately and for some considerable time afterwards, for after a few days the fatty tissue of the bulb and the periorbital periosteum become so unfiltrated with small cells, that they are quite stiff and thus afford a hold for the eye. It is true that as the process of cicatrization goes on the eye becomes a little drawn to the outer side; but still there is then no immediate danger, for, meanwhile, the branches of the trigeminus, which were uncut and were paralysed to a great extent immediately after the operation have recovered and have regained their functional activity.

There are other precautionary measures of quite as much importance to be taken against the risk of suppuration of the eye and the resulting panophthalmia. Snellen's experiment, in which he learnt to avoid the immediate result of section of the trigeminus in rabbits, viz. panophthalmia, by sewing the ear over the eye is very well known. The resulting keratitis which had always been looked upon as a neuro-paralytic form of inflammation was thus transferred to the class of traumatic inflammation. On the strength of this experiment I have been in the habit for years past of sewing the lids together by means of catgut without paring the edges, so that the lids separated naturally in the course of from 6 to 8 days ; this I have done after every resection of the upper jaw. The result has been, that I have never since seen any suppuration or purulent destruction of the eye ; and this observation appears to afford, as I believe, a brilliant proof of the truth of Snellen's experiments for man. After the re-opening of the lids I have never met with any further destruction.

In the ear we occasionally see changes occur ; these may consist either in the gradually increasing difficulty of hearing going on to total deafness, or in a purulent catarrh of the middle ear, which may lead to perforation of the membrana tympani, followed by slight or even absolute loss of hearing on the affected side. If such patients be examined before the operation, we shall not seldom find impairment of hearing on one side with some affection of the membrane, at other times we shall be told of an existing catarrh of the eustachian tube. These conditions are, however, etiologically entirely distinct. Luca, in 1868, first directed attention to the fact that patients with blocked-up noses are often very hard of hearing ; they find themselves in the same condition as patients during the course of Toynbee's experiment, in which the diminished pressure in the throat also produces a reduction in the air pressure in the middle ear, and thus draws the membrana tympani inwards. In a case of new growth, if both sides of the nose have become completely obstructed, the deafness may be referred to this cause ; usually, however, one nasal passage is free, and we have to deal with an ordinary catarrh of the eustachian tube. The simple explanation of this is the extension of the irritable condition of the nasal mucous membrane into the tube, and this is what will usually be found after the operation. In other cases, however, it appears to me that we cannot exclude the possibility of the mouth of the tube having been wounded by either the saw or the chisel, and of having in this way led to a cicatricial closing of the tube. I must acknowledge that I have hitherto not paid sufficient attention to this, but I consider it important enough to be more careful about it in future. It would not be so bad, if in cases where hardness of hearing had been noticed, the tube were catheterised, and air forced in immediately after the operation, and before the closure of the flaps, and also if later on the catheter were passed regularly as soon as symptoms of catarrh of the tube were noticed. I have no experience whatever as to whether the difficulty in performing this slight operation be greater when the maxilla is wanting.

I conclude with the hope that the consideration of the points I have touched upon may possibly make the treatment of tumours of the upper jaw in a slight degree more promising, than has been the case until now.

ON SOME PRACTICAL POINTS IN THE PHYSIOLOGY AND PATHOLOGY OF THE FIFTH PAIR OF NERVES.*

By T. Stretch Dowse, M.D., F.R.C.P.Ed.

Mr. President and Gentlemen,

When my friend Mr. Wallis, your very able and scientific Secretary, did me the honour to ask me to give to the Odontological Society of Great Britain a paper on some subject which may be of interest to the members, I at once consented, believing that the great and important fifth pair of nerves must certainly afford a field for thought, reflection, and discussion. I need scarcely say that these are essentially the dentist's nerves, but to the physician they are of equal interest. [Dr. Dowse then explained the origin and distribution of the fifth nerve.]

I see by your Transactions that no less a great surgeon than neuro-physiologist, Mr. Victor Horsley, brought before your Society at a recent date some notes on the pathology of Inveterate Neuralgia of the Fifth Nerve; but it seems to me from reading this paper, that he gave his attention almost exclusively, to the surgical aspect of the question, so that I shall neither tread upon his heels nor follow in his footsteps, for I do not believe that all cases are adapted to surgical interference; and the most important part of the discussion which I shall endeavour to provoke will relate to your experience, which must necessarily be very great, concerning cases of neuralgia, the result of peripheral dental irritation when extraction of the teeth is a sure and certain remedy, and those cases which are due to change in the structure of the fifth nerve, the ganglia with which it is connected, or the part from which it derives its origin.

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* A paper read before the Odontological Society of Great Britain.

We have seen that the trigeminal is the great nerve of sensation for the head and face, and that its third division is motor and sensory, the motor branch supplying the muscles of mastication. The two superior divisions are in connection with the Gasserian, the ciliary, the spheno-palatine, the otic, the geniculate ganglia, the superior cervical sympathetic ganglion, the cavernous plexus of the sympathetic and the tympanic plexus; so that its relationship makes it a nerve of grand importance in all functions of sensation and nutrition which abound in the region to which it is distributed.*

Hence we find that peripheral irritation of a dental nerve can produce defects of mind by altoring the circulation of the blood in the brain, through the cavernous plexus of the sympathetic, or vision may become cloudy or obscured, or hemianopsia or diplopia may exist, or we may have lacrimation, photophobia, strabismus, and partial ptosis with occasional spasmodic contraction of the orbicularis muscle; even the retina may become paralyzed, with varying and variable states of the pupil to which I shall have again to call your attention. Each of the important ganglia to which I have just referred, or all of them, may be influenced at the same time by peripheral irritation of the fifth nerve, and that irritation may arise from the pulpy condition of the fang of a tooth. Understand me, I do not mean to say that these conditions may or must arise from this cause, but it is on record that they do arise, and this has been proved because when the tooth has been removed these abnormalities of function have immediately subsided.

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* "The trigeminal arises, like a spinal nerve, by two roots: the smaller *anterior* or *motor* root proceeds from the '*motor trigeminal nucleus*,' which is provided with many multipolar nerve cells, and lies on the floor of the medulla oblongata not far from the middle line. Fibres connect this mucleus with the opposite side of the cerebrum. The large *posterior sensory* root receives fibres from—(1) the small cells of the '*sensory trigeminal nucleus*,' which lies at the level of the pons, and is the analogue of the posterior horn of the grey matter of the spinal cord. (2) From the grey matter of the posterior horn of the spinal cord downwards as far as the middle of the cervical region. These fibres run into the posterior column of the cord, and ascend into the trigeminus (3) The '*trophic root*' (Merkel) arises from a mass of cells at the side of the aqueduct of Sylvius. (4) Another root comes from the upper part of the medulla oblongata, from the substantia ferruginosa under the locus ceruleus. These fibres decussate. (5) Some fibres proceed from the crus of the pedunculus cerebri. (6) Some fibres come from the cerebellum through the crura cerebelli. The origin of the sensory root anastomoses with the motor nuclei of all the nerves arising from the medulla oblongata with the exception of the abducens. This explains the vast number of *reflex relations* of the fifth nerve. The thick trunk appears on each side of the pons, when its posterior root (perhaps in conjunction with some fibres from the anterior,) forms the Gasserian ganglion upon the tip of the petrous part of the temporal bone. Fibres from the sympathetic proceed from the plexus cavernosus to the ganglion."—"*Human Physiology*," *Landois and Stirling*.

The pathology of the trigeminus is still somewhat obscure, and although trying to bring light out of darkness, and to reveal the cause of these somewhat hidden mysteries, we have as yet failed to elicit a full and comprehensive explanation of these subtle and exceedingly interesting phenomena.

It is to be hoped that gentlemen following the special and dental branch of our profession will study carefully, anatomically, physiologically, pathologically, and clinically this fifth nerve, and help us in elucidating the difficulties which still overhang a very important subject.

Heredity.—There can be no doubt that some families inherit a predisposition to some special forms of nervous affections (neuroses) unquestionably associated with instability and exhaustion, and we must not forget that the fifth nerve is as liable to become exhausted as any other nerve in the body, and a nerve exhausted means a painful nerve, or a spasmodic nerve, or both, just as it is related with the sensory or the motor side of the nervous system, or with both.

The physician is daily receiving evidence of the transmission of these states from parent to offspring, but not necessarily of precisely the same type. Patients say, "I am afraid, Doctor, it is the family complaint."

How often do we not find in practice that the same members of a family will suffer from megrim, sick headaches and epilepsy, and that they will transmit to their children neuralgic tic of the face or paroxysmal insanity, or neuroses of the vagus demonstrated by asthma, vomiting, or some other form of nerve storm. In such cases as these I should scarcely hope for a complete cure of neuralgia by either nerve section, or nerve-stretching, and I might add with emphasis from tooth-extraction.

I feel sure that most affections of the fifth nerve are intimately associated with and exist in those individuals whose sensory nervous systems are less stable than their motor, and especially when they are made of bad stuff, and when their power of building up (metabolism) is defective, such persons fail in powers of endurance, and their resisting power to external influences is small as compared with a healthy person. In all cases like these, when over-excitation, whether of the nervous centres themselves or of the terminal nervous expansions, is readily and easily produced, such persons are particularly prone to develop defects in the fifth nerve.

In trigeminal neuralgias there are three special points of pain, namely, at the supra- and infra-orbital foramen and the mental foramen. If the neuralgia be limited to the first branch of the fifth pair the pain spreads over the brow, eyebrows, and eyelids, and sometimes also the eyes.

In *tic-douloureux* there is both pain and spasm. The causes of this form of neuralgia are often peripheral; they might be due to decayed teeth or pressure upon the superficial nerve branches, or local inflammation of the neurilemma of the nerve, or the pressure of a neighbouring clot or tumour upon the nerve trunk. The spasms or paroxysms are repeated at very short intervals, and they may attack any part supplied by the nerve. The spasms may occur as often as once in every few seconds, and are of a most agonizing character. In very severe cases the mouth is drawn to one side, so that the saliva flows over the chin and neck, the conjunctiva is injected and the tears flow freely, whilst a constant discharge from the nose is kept up.

At the Ophthalmological Society in the year 1882, Mr. Wherry, of Cambridge, communicated notes of a case of paralysis of the left fifth and facial nerves in a child, which he attributed to the irritation of dentition, which appears to me to be instructive. The left eye was somewhat atrophied, the cornea everywhere opaque and insensitive ; there was no loss of sensation all over the region supplied by the left fifth nerve ; the teeth in the left upper jaw were much decayed, but there were no teeth in the left lower jaw, those on the right side were good. There was paralysis of the left orbicularis palpebrarum and facial muscles, and slight central opacity of the right cornea. There was no evidence of syphilis, and the child's eyes were said to have been bright and clear until it was seven months old. He does not say whether there was pain or not.

I have said that in tic-douloureux the most superficial nerves are principally affected, and their surface emerging points are the chief seats of pain. The physiology of this, according to the experiments of Arloing and Tripier, is : that all nerves, motor sensitive and sensory motor, possess recurrent fibres which become more numerous as the nerve approaches the periphery, and decrease in number as they go back towards the centre until they finally disappear altogether. As these recurrent fibres have never been seen to terminate in the thickness of the nerve bundles, they may be assumed from the characters noted to end at different points in the tissues adjoining nerve trunks or their branches. It is these fibres which in certain cases of neuralgia would be affected by morbific agents, and which may possibly explain the occurrence of the isolated painful spots on nerve trunks and their branches. It is certain that extension of pain very often takes place through the medium of the nerve centres. In trifacial neuralgia it is not uncommon for the pain to glance from the ophthalmic branch to the mastoid process and upper part of the neck ; this we know from the anatomy of the nerves it might easily do. Of all the three divisions of the fifth nerve, the supraorbital is most commonly affected. It seems more prone to inflammatory action, probably of a rheumatic or gouty nature ; the pain usually comes on at night. Bull says if this frontal neuritis be not arrested, and if the neuralgic symptoms be prolonged during weeks and months, there results very often spasmodic contractions of the muscles of the face and lids. Galezowski used to cure such cases by a succession of blisters.

A very important and, one might say, test case of paralysis of the fifth cranial nerve, sensory and motor, has been recently published by Dr. Ferrier in the *Lancet* of January 7th, 1888, which bristles with clinical acumen and physiological knowledge. The subject was a railway porter, who, after meeting with an accident to the head, suffered from severe paroxysms of pain in this region and the face. About nine months ago he had some teeth drawn from the right upper jaw, unaccompanied with pain, showing the anæsthesia which existed unknown to him. Six months ago he suffered from inflammation and impaired vision in the right eye. The muscles of mastication supplied by the motor division of the right fifth were paralysed, and the same muscles would not respond to the Faradaic current. There was complete analgesia and anæsthesia on the right side of the forehead and temporal region, the right eyelids and eyeball, the right side of the nose and right cheek. There was also complete insensibility of the right nostril and the mucuous membrane on the right side of the mouth as far back as the tonsil, and a similar condition over the whole of the right side of the tongue. Smell was slightly diminished on the right side, taste was not appreciated on the right anterior two-thirds of the tongue, but it was on the posterior third, and on the whole of the left side. There was distinct tension of the right eyeball, but the fundus of both eyes was normal. Dr. Ferrier remarks that these symptoms are indicative of impaired continuity in the motor and sensory divisions of the fifth nerve, and in favour of the peripheral nature of the lesion was the atrophy with loss of Faradaic contractility of the muscles of mastication. The fifth nerve was not unfrequently implicated, by tumours, inflammation, syphilitic and otherwise, and injuries affecting the middle fossa of the skull. The condition of the right eye (which gave him severe paroxysms of pain) deserves attention because the condition was an example of what is termed neuro-paralytic ophthalmia, an affection which has been frequently observed both in animals and in man as the result of lesion of the fifth nerve. The inflammation of the eye after lesion of the fifth nerve is, in fact, generally appealed to as a proof of the existence of trophic nerves; but partial injuries of a nerve are more apt to cause irritation than complete section. One other point to consider in reference to this case was, viz., the origin and course of the nerves which minister to the sense of taste in the anterior two-thirds of the tongue. That the glosso-pharyngeal is the special nerve of the sense of taste of the posterior third of the tongue and neighbouring regions has been amply proved. A curious case has, however, been recorded by Gowers (in Vol. III. "Journal of Physiology") of anæthesia of the fifth nerve (supposed to have been caused by lesion near the pons) in which the sense of taste was abolished, not only in the anterior two-thirds, but also in the posterior third of the tongue and neighbouring region, a case which would seem to show that all the nerves of taste may occasionally run in the trigeminal nerve; but, according to Schiff and others, the chorda tympani really conveys nerves of taste to the anterior two-thirds of the tongue.

I have picked out, so to speak, the chief clinical and physiological points in this extremely unique and interesting case.

I should like to give you some short notes of another very interesting case which came under my care in 1876. He was a patient in the Central London Sick Asylum at Highgate. I send round a photograph of this patient, which shows the facial paralysis of the right side, with considerable flattening of the right half of the face, accompanied with complete anæsthesia.

S. G., aged fifty-five, was formerly a soldier, and had seen considerable service. While on the march from Allahabad to Cawnpore he fell down unconscious from sunstroke; he left the service in 1861, and had no further illness until December, 1875. At this time he was at work in a drifting snowstorm, with a bitter cold east wind blowing, when he was suddenly seized with acute pain on the right side of the head, face, neck, and down the right arm; he felt as though the right side of his mouth had given way, and it was with great difficulty that he could open his mouth at all.

When I first saw him, on July 4th, 1879, his facial appearance was expressive, and I am most anxious not to weary you with unnecessary details. There was complete facial paralysis and complete anæsthesia of the right side of the face, and partial paralysis of the muscles of mastication, also on this the right side, the anæsthesia involved the mucous membrane of the cheek, and the gums, and the eye; the pupils were contracted and the ocular muscles were normal; the ophthalmoscope revealed no change in the fundus, but the vision of the right eye was impaired, hearing on the right side was defective, but he complained of singing and buzzing noises in the head; the peripheral terminations, supra-orbital, infra-orbital, and molar, of the fifth nerve were at times the seats of most excruciating pain, and likewise the right eyeball; the sense of smell on the right side was lost, the tongue on the right side was coated with fur, and devoid of the sense of taste; the muscles on the right side of the face did not respond to a strong Faradaic current; this, with the muscular atrophy, leads to the conclusion, perhaps, that the lesion producing paralysis of both the facial and the fifth, with anæsthesia, was of a peripheral nature, although I thought it probable that the Gasserian ganglion or the pons Varolii might have been involved in some lesion, for the reason that a lesion, which involves other nerves than the fifth is usually of central origin, but the attack, if one may take the history as true, was so sudden and complete, that the periphery, and not the centre of the fifth nerve, was at fault. If the condition were due to some degenerative and progressive change in the Gasserian ganglion, or to a tumour of the pons, which by the way is possible, the signs and symptoms would have been more tardily and less suddenly and completely developed. I had no opportunity of following this case to its termination, as the patient passed from my observation.

I must now draw your attention to the consideration of some conditions of the fifth nerve, due to sympathy with the irritability of distant organs, notably the stomach and uterus, and also the teeth. These considerations are based upon the theories of reflex action and inhibition, and they are unquestionably of no small importance. Galen was quite aware of these phenomena. "For the head," he says, "communicates to the bowels, and the bowels to the head, their respective disorders, on account of the magnitude of the nerves which reach from the brain to the stomach, by which also an excess of sensibility over that of other portions of the body belongs to this limited region, and on this account also vomitings of bile follow on certain injuries of the head, which extend to the meninges." We know quite well from everyday observation that gastric irritation does give rise to pain in those parts of the head (headache) supplied by the ramifications of the supra-orbital branch of the fifth pair of nerves. Megrim, sick headache, and hemicrania are terms applied to these sympathetic states.

It is most probable that the hyperexcitation of the terminals of the vagus is conveyed to the medulla oblongata, and if vomiting does not result, the sensory root of the fifth becomes inhibited and leads to derangement in the sensory and trophic branches distributed more particularly to its ophthalmic branches, and this appears to me to be an explanation of the cause of these so-called bilious and sick headaches.

Facial neuralgia is often preceded, accompanied, or followed by violent pains in the stomach (gastralgia), or in the side (pleurodynia). M. F. Neucomt, in writing upon neuralgia of the scalp, says: "I have found it alternate three times with gastralgia, once with true facial neuralgia, once with intercostal, lumbar, and uterine neuralgia, and once with palpitations."

Opinions vary greatly regarding the causation of supra-orbital neuralgia in association with megrim and headache, some physicians believing that it is essentially of nervous origin, others that it is sympathetic or reflex from other organs, notably the stomach. One thing is quite certain, that these derangements rarely occur in persons of good constitution, and whose nervous systems are toned and well balanced. To my mind, and I have had some experience of these conditions, they are invariably associated with a low form of vitality; digestion and assimilation are defective, and the blood is usually deficient in hæmoglobin. There is a decided want of correlative integrity between the nervi nervorum and the nerves themselves, and particularly between the cerebro-spinal and the sympathetic nerve ganglia.

(To be concluded.)

ON ACTINO-MYCOSIS, AND THE RELATION OF MICRO-ORGANISMS TO SOME DISEASES AND INJURIES OF THE JAWS AND MOUTH.

By Frederick Eve, F.R.C.S.,

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(Concluded from page 403).

When internal organs, as the liver, are attacked, abscesses may burst through the abdominal wall or perforate the diaphragm and point through the ribs.

Secondary formations have been found in the liver, lung, kidney, spleen, intestines, brain, substance of heart, and in the muscles and skin. In one of Ponfick's cases a growth had penetrated the internal jugular veins and there was a large actino-mycotic tumour projecting into the right auricle and ventricle.

The distribution of the disease in man may be gathered by the analysis of seventy-five cases (all those recorded up to 1886) by Moosbrugger. In twenty-nine the disease was in the neighbourhood of the lower jaw, in the mouth and neck; in nine in the upper jaw and cheek: in one case in the tongue, and in two involving the pharynx and œsophagus; eleven in the intestines and abdominal viscera; fourteen in the bronchial tubes or lung. In seven cases the seat of the disease could not be ascertained. The frequency of primary disease in or near the mouth and jaws may be gathered from the fact that in forty out of the seventy-five cases it affected those parts. Up to the present time only four cases have been observed in the tongue in man, whereas this is not uncommonly the seat of this disease in cattle.

Experiments on animals, and other circumstances, such as the constant presence of actino-mycetes, and the nature of the new formation, place it beyond question that the ray fungus is the *materies morbi.* The disease may be transmitted by inoculation from cattle to cattle. The experiments of Johne and Ponfick on cattle prove that the insertion of portions of the morbid growth in the subcutaneous and muscular tissues, and in the peritoneal cavity, are certainly followed by positive results. Small nodules show themselves in a month, and the disease assumes unmistakeable dimensions in three or four months.

Typical growths appear in the lungs a few months after injection of the diseased tissue in a finely divided state into the circulation.

A rabbit was successfully inoculated by Israel in the peritoneal cavity with portions of an actino-mycotic tumour from man; but no marked development of the disease took place. Ponfick failed to inoculate both rabbits and dogs. In swine the same form of actino-mycosis occurs as in man, and having a like distribution. Rounded nodules similar to actino-mycosis were found by Johne in twenty out of twenty-one healthy pigs examined.

Another disease closely resembling that under consideration was described by Virchow, and subsequently more fully by Hertwig and Dunker, in swine. It consists in the formation of minute nodules in the muscles. These lie between the muscle bundles. They are composed of a central portion made up of fine fibres and granules, and surrounded by club-shaped or elongated pyriform rays very like the ordinary variety of actino-mycosis. Calcification, extending from the centre to the circumference, rapidly takes place. No zone of granulation tissue is formed. Israel and Böstrom claim to have cultivated actino-mycetes in blood serum. The cultivation, according to Israel, resembled the growths in man and animals. Boström failed to reproduce the disease in inoculated animals with his cultivations.

The botanical position of the ray fungus has not been, I believe, determined.

Our information regarding the manner in which the fungus gains access to the bodies of man and animals is very limited; man probably derives it from the same source as animals, and only rarely directly from them. It enters by an abrasion, wound, or other solution of continuity. Thus it has originated in the scar after removal of a cancer of the breast. The probability of carious teeth being the point of entrance is very strong. In a case of actino-mycosis of the submaxillary region Kappener detected ray fungus clubs and leptothrix filaments in two carious teeth. Israel also found, after extraction, actino-mycetes in the alveolus of carious teeth from which the disease appeared very distinctly to have originated. Further, in a very large proportion of cases in which the mouth and adjoining parts were involved, caries of teeth or erosions of the gum and cheek co-existed. These parts may also be inoculated through slight wounds from articles of food and grains, seeds, and pieces of straw (often chewed by rustics) have been suspected as the cause. Particles of the fungus may be swallowed and enter by some lesion of the intestine, or be introduced into the air passage, by inhalation of particles from the air or from a primary growth in the mouth.

It is worthy of remark that while over seventy cases have been recorded on the Continent, only seven had been published up to 1887 in England and America. This may be explained either by supposing that this disease often passes unrecognised in England and America; or that it is more common on the Continent. Should the former surmise prove correct, the Teutonic fondness for sausages and uncooked ham may explain the diversity, especially as pork is affected as well as beef. When flesh is prepared in the usual way the disease is so evident that its transmission to man by diseased meat is improbable.

The direct inoculation of man from animals, as already mentioned, occurs rarely; for in the collection of seventy-five cases already mentioned, in only ten were the individuals engaged in occupations which brought them into contact with cattle—as farmers, peasants, and farm labourers; whilst in only two cases did the sufferers have directly to do with diseased cattle. In one of those, a case of actino-mycosis of the tongue, the patient had opened and subsequently looked after a tumour of the jaw in a cow.

Prognosis and Treatment.—As to prognosis everything depends on the situation and duration of the disease. If some part be affected which can be completely removed, and the disease is of short duration, the prognosis is good. But operations on cases in which the disease is extensive, of long duration, and has perhaps given rise to secondary growths of the viscera, can, like similar operations in cancer, only be palliative in their result.

When affecting an internal organ, such as the lung, liver, or kidney, actino-mycosis must necessarily be fatal; although it has been proposed, when it is seated in the liver, to expose the part and remove the diseased mass by scraping. In those cases in which no radical cure can be affected, the injection of solution of perchloride of mercury has been recommended. In a case now under my care for some time at the London Hospital in which I suspect actino-mycosis of the liver, I am giving the patient large doses of perchloride of mercury. This patient presented himself with a rounded projection in the right hypochondrium, apparently arising from the surface of an enlarged liver. The mass softened and burst through the skin, leaving very numerous sinuses, which burrowed over the right hypochondrium and left epigastrium in all directions. These sinuses, have been laid open and scraped from time to time, but without much improvement. He has been under observation about two years. There is no history, nor any evidence of syphilis. Unfortunately up to the present time I have been unable to make the diagnosis conclusive by finding actino-mycetes in the discharge.

It has already been mentioned, that in cases in which acute abscess is rapidly set up, a cure may be effected by simply opening the abscess and scraping its walls. In actino-mycosis of the jaws, and other parts which admit of removal by operation, the same indications hold good as in true tumour formations. If possible the disease should be entirely removed, the incisions being made through neighbouring healthy tissues; but if it be too extensive for this the morbid growth should be followed up and eradicated, either with the knife or by means of a sharp spoon, until healthy structures are reached. This proceeding is liable to failure from the devious course taken by extensions of the disease. Local recurrences, usually indicated by abscess formation and increase of swelling and induration of the tissues, may be dealt with in the same manner; and cases have been brought to a successful issue after two or three operations.

If I have not already trespassed too much on your time, permit me to offer a few remarks bearing on the relation of micro-organisms to some other disease and injuries of the mouth. It has been estimated by cultivation experiments that a human mouth may harbour no less than fifty different varieties of micro-organism. Butlin has shown that the fur on the tongue is almost entirely due to the growth of masses of micro-cocci and to the bacillus subtilis. It is not my intention to speak of the pathology of caries of the teeth before this Society, but I may remind you in passing that bacteria have been supposed to be closely connected with the process. According, I believe, to later views the teeth are first decalcified by some acid taken into the mouth, generated by the growth of bacteria, or produced by a perversion of the secretions, and then almost any form of micro-organism may assist in breaking up the decalcified dentinal tissue. Otherwise micro-organisms are incapable of penetrating healthy teeth. A micro-coccus which produces septicnæmia when injected into rabbits (Starnberg) has been separated from the secretions of the mouth of healthy individuals. The mouth has, indeed, been compared to a hot chamber, containing myriads of micro-organisms, and offering conditions most favourable for their growth. Yet, strange as it may seem, wounds of the tongue, dental operations, and fractures of the jaw, I think I may say, rarely followed by serious complications. The case of fractures is the most remarkable, since they are nearly always compound, the gum being lacerated and allowing the secretions of the mouth to gain free access to the fracture. Antiseptics and antiseptic dressings cannot be applied; and the conditions for drainage are not good. Notwithstanding all this, how different is usually the result, compared, for example, with the course of a compound fracture of the leg treated as an open wound. Mr. Heath states the case in the following negative way:—"Abscess is not a very uncommon complication of severe injuries of the jaw." I have seen a considerable number of cases of fracture of the lower jaw at the London Hospital, but I do not remember to have observed one in which any trouble arose from suppuration. Again, in periodontal abscess set up by carious teeth, although the suppuration must often involve the cancellous tissue of the bone, yet osteo-myelitis and extensive necrosis are so rare that I venture to call your notice to this specimen. It comprises the left half of a lower jaw. The periosteum is almost entirely separated from the bone as the result of diffuse periostitis and osteo-myelitis. The articulation of the jaw was destroyed by suppuration. The last molar tooth was found loose and its socket filled with pus. This was apparently the source of the trouble. The patient, a man aged twenty, went on a cold day to his grandfather's funeral, and, as he put is, caught cold in a tooth. Immediately afterwards he was attacked with toothache, followed by constitutional disturbance and abscess formation. Death took place four weeks later from pyœmia. This reverse side of the picture brings out the other more favourable aspect in a stronger light, and leads us to ask why such occurrences are not more common, for there can be no doubt that pyogenic micro-cocci are abundant in the mouth. Vascularity and high nutritive activity of parts we know check the action of micro-organisms, perhaps also the saliva may have some power of diminishing their virulence. In the case of animals it is certainly nature's remedy.

I cannot, however, doubt that first conditions of the mouth have an important influence in generating certain diseases, especially the ulcerative affections of the buccal cavities in children. Noma has been shown by Mr. Lingard to be due to a leptothrix-like bacillus which grows into the tissues and destroys them in its progress. I have also observed cases of chronic glossitis which appeared to be directly due to the presence of large numbers of putrefactive organisms in the mouth. This was strikingly evident in a man who, some three years ago, came under my care at the London Hospital. He had suffered for some months with soreness and chronic inflammation of the epithelium of the tongue, which was covered both on the dorsum and sides with the usual white patches. There was no evidence of syphilis. Iodile of potassium, arsenic, and local antiseptic and other remedies had been given for some months, without effect. I noticed that the gums were retracted from the teeth, and these were thickly covered with a foul fur, containing abundance of micro-organisms. There were several stumps embedded in the gum. The stumps were removed, with some of the more foul teeth, and he was given an antiseptic dentifrice. Immediately the affection improved, and in a very short time the tongue regained its normal appearance.

I could also cite another less severe case in a lady, which was cured by attention to the teeth. The breath in this patient was very offensive. It seems to me a fair inference that in some of these cases the inflammation of epithelium is directly excited and kept up by the irritating products of bacterial growth. In cancer of the tongue also the mechanical irritation of its edges by the jagged margins of carious teeth is, no doubt, an important exciting cause; but probably strongly accessory to this is the more subtle action of products of decomposition generated in them.

To the operating surgeon it is of great interest to learn that a micro-coccus similar to the area-coccus of Friedländer has been separated from this mouth. This organism is found in most cases of croupous pneumonia, and is stated to be the cause of that affection. After operations, such as removal of the tongue, conditions would obtain favourable for its growth, especially if the wound be allowed to become foul. The organism would be inhaled, and thus a ready explanation of the pneumonia complicating these operations is obtained. The entrance of blood into the air passages would doubtless act as a predisposing cause.

Finally, if time permitted I would draw a parallel between the formation of tartar in the teeth and that of the phosphatic calculi of the urinary bladder. The latter being the direct result of changes set up (salts of the urine) by the micrococcus ureæ.

Some of the facts I have enumerated show how much the public are indebted to your profession in the department of preventive medicine. They also indicate that risks are run on even slight operations of the mouth, although disasters rarely occur. They enforce in our minds those principles of cleanliness to which modern surgery owes so much of its progress.

Le Sage has said that temerity escapes censure when it is happy. I trust that my temerity in speaking on these subjects to your Society may escape your censure, even if it does not gain your approbation. At least let me hope that actinomycosis may become somewhat more widely known and studied in your branch of our profession.

British Journal of Dental Science.

LONDON, MAY 15th, 1888.

"HOME RULE IN DENTISTRY; PLAN OF CAMPAIGN."

"Scio" L.D.S., whoever he may be, has committed himself in the pamphlet now before us to a distinct line of thought and plan of actions, such as need some passing notice at our hands. Writing somewhat in the same lines as the Chesterian champion of the "L.D.S.'s only," but avoiding that gentleman's braggadocia and vituperation, "Scio" has attempted to make a strong case in favour of a resuscitation of the College of Dentists. We propose to give the gist of "Scio's" arguments, that we may consider them, and give them the discussion they may merit. The College of Dentists was deposed in favour of the College of Surgeons of England, which received students and those in practice prior to Sept. 1859, under certain restrictions, excluding others save through the curriculum. The Act of '78 gave the opportunity for further admissions to this College; but "Scio" thinks the whole action of the College of Surgeons showed an unsympathetic relation between the medical and dental professions. The Act further admitted nearly 4000 individuals to the Dental Register who were persons in no sense of the word *bona-fide* dentists. Then "Scio," after deploring the decadence of old-fashioned ways and systems, the absorbing passion of greed and gain in our profession, says, we are not all as bad, "for there is a small and select body of men, who write L.D.S. after their names, whose motto is *Noblesse oblige*, who, in the midst of all this hurly-burly, calmly stand aside waiting for Jupiter to come down and help them out of the rut which the folly of some one has got them into." Who this lethargic body of men may be does not transpire, nor can the unassisted reader apprehend who Jupiter is, possibly "Scio," it may even be Mr. Bullin, any way we think the L.D.S.'s might do better than sit in the rut, and wait for an heathen deity, who, if cognisant of dental ethics, is presumably not more attached to the pure strand of the L.D.S., than to that mongrel creature the M.R.C.S., L.D.S. Advertising is essential to trade; it is deemed disreputable in the profession, "no other profession but ours resorts to it," this, "Scio" thinks, is due to the youth of our profession, on the one hand, and on the other, to the fact that "butchers, bakers, and candlestick-makers," are all jumbled up in the Register, cheek-by-jowl with the best men in the profession, the fact that these gentry know nothing of dentistry, and are charlatans and rogues does not, "Scio" thinks, affect their suceess. Only the benighted inhabitants of the village of London will listen to the "childish prattle" which says, success comes to the good workman and not to the advertising knave. "Scio" knows it is not so. He finds that the advertisers carry it all their own way, otherwise he naively asks, *how* is it the incapable man who advertises holds his own against Licentiates of Dental Surgery. This evil, "Scio" believes, has resulted from the attempt to graft a trade upon a profession; the remedy which common sense would suggest is in "Scio's" words, "that we should separate the craftsman's art from dental surgery, and let it be considered a distinct branch of industry—of course, with liberty to every dentist to practice it if he likes and how he likes without let or hindrance from any one. "Scio," admits that many reputable members of the profession might regard such a proposition with horror. We think this not improbable. The instructive page which follows tells us that "thousands" (of bad dental workmen) "rushed in where angels would formerly have feared to tread," this very much Bowdlerised version of Pope's well-known line would come as a refreshing novelty to the author, if, poor man, he didn't fail to recognise it altogether. "Scio" next proposes to inquire what benefit has occurred to us from our connection with the medical profession, 1st, As regards the degree, *en passant*, we may remark, as we have several times before noticed, the L.D.S. is not a degree, never was and never will be; 2ndly, That the College of Surgeons never had the power of granting a degree; and 3rdly, That a degree is always conferred by an University, while the colleges have but the power of giving diplomas. These are details which, perhaps, Jupiter, when he comes down to help the gentlemen out of the rut, will take the opportunity of posting them up in. We must, however, postpone for the present, further criticism, and with it defer the conclusion of "Scio's paper. "Scio," we think, has done a useful thing in writing his pamphlet; the more the matter is ventilated, the more men think of it, the more discuss it, and the more reliable information they gain regarding it, the better for all concerned.

THE POST-GRADUATE COURSE AT THE DENTAL HOSPITAL OF LONDON: A RETROSPECT.

After a very successful session, the course was completed on May 7th. The number of practitioners who availed themselves of the lectures and demonstrations, show, if proof were needed, how the profession appreciate post-graduate instruction. From the first we strongly advocated the cause, and it is gratifying to find that in spite of the somewhat ungracious opposition which arose from certain quarters, that the post-graduate course held at the London School of Dental Surgery has been successful, and has been regarded as a boon by many of the more intelligent members of the profession. A *resume* of the work done will afford a clear idea of the scope of the course, and enlighten those who were unable to attend the Lectures and Demonstrations, and would yet like to know the kind of system pursued there.

On April 24th, Mr. Woodhouse demonstrated by filling the crown cavity and approximal surface of a bicuspid, lining the cavity with tin, completing with gold cylinders and employing hand pressure throughout. Mr. Leonard Matheson demonstrated the use of the rubber dam, and explained several ingenious methods which he had contrived for excluding saliva whilst applying a dressing. On the following day Mr. Storer Bennett explained and demonstrated the treatment of pyorrhœa alveolaris by means of sulphate of copper, while Mr. Hern explained the advantages and method of using cocaine when employing separators. On April 26th, alveolar abscess was treated in a lecture given by Mr. Arthur Underwood.

Mr. E. Lloyd Williams gave practical applications of the electric mallet, actually filling crown cavities in the presence of the class, a foot connection being used. The work of the following day consisted of demonstrations of hand pressure in gold filling by Mr. Matheson, and a lecture on the Treatment of Exposure of the Pulp, by Mr. Hutchinson. Next came practical demonstrations by Mr. Hern on the use of the Automatic Mallet, the distal surface of a canine being filled before the class. Mr. Lloyd Williams showed numerous cases exemplifying the treatment of dead teeth by dry dressings. On the ensuing Monday, Dr. Walker gave a most interesting demonstration of bridge-work, fitting several mouths with very skilfully contrived adaptations of this method of practice. Dr. Walker's proceedings provoked the liveliest interest, and were certainly one of the most effective features of the course. Mr. Huntingdon lectured upon the properties of metals.

Various methods of gold fillings were demonstrated on the ensuing day by Mr. Woodhouse, and Mr. Storer Bennett introduced the Herbst method. On Wednesday, Mr. David Hepburn undertook to explain the methods of employing soft gold, and performed some remarkably clever and swift operation of fillings, some of which were done under water. Fillings with plastics received due attention at the hands of

Mr. Matheson, who very carefully went over the usual methods in vogue. The next day was devoted to filling by the aid of the electric mallet, and Mr. E. Lloyd Williams, the demonstrator, gave due directions as to the best plans of arriving at a nice contour on the filling. Mr. Woodhouse during the next day again demonstrated on gold fillings, but this time employing cohesive in conjunction with non-cohesive gold.

Mr. Bennett also made gold fillings the subject of a demonstration, while Dr. Walker gave a thorough exposition of the treatment of cleft palate in so far as that affliction comes into the province of the dentist. Dr. Walker showed how to take a model, employing a patient with cleft palate for that purpose. The ensuing Saturday was devoted by Mr. Hern to the explanation of the most recent modes of treating fractures of the jaw several patients were shown who had been treated by the use of a Hammond's splint, good results having been obtained ; the method of applying this splint was gone into and many useful hints given. The last day was devoted to various demonstrations, gold fillings and other matters such as treatment of dead teeth. The house surgeon, Mr. J. F. Colyer, and the assistant House Surgeons, Messrs. G. Seymour, A. R. Colyer, were in attendance throughout the course, and by their obliging behaviour and uniform kindness and courtesy needed not a little to the comfort alike of the instructors and those instructed. The electric apparatus used was supplied by Messrs. Coneton, and will receive a fuller notice in our columns later on.

THE "DAILY TELEGRAPH" ON DENTISTRY.—It would be rather interesting to learn what particular form of compact exists between the American dentists and the *Daily Telegraph*. That paper has now upon several occasions employed one of its nimble-fingered writers to take up an elaborate puff of transatlantic dentistry. After the usual talky-talky about anything but the subject of the leader and a profuse sprinkling of more or less hackneyed quotations, the gentleman who was recently "put on" to write the leader, informs his readers what marvels American dentists have done, how they have enjoyed the confidence of crowned heads and generally "run right away" from their less gifted English brethren. Of course it is well known by all who are in the charmed circle of the "daily press" how utterly valueless such articles are, since they only too frequently are knocked up from a few pamphlets or even verbal directions given by the editor, and are usually by the hand of a writer who knows little or nothing of the matter in question. Still such inaccurate press work is very detrimental to the interests of the public at large, as it often gives the less scrupulous members of our profession a handle wherewith to gain their own unworthy ends at the expense of the public.

THE EFFECTS OF TEA UPON THE TEETH.—A correspondent of the *Bristol Times* writing upon "The Decay of Children's Teeth" sets forth his conviction that, "tea" is the great stumbling-block in the way of our children's teeth. He would have us believe that the unobtrusive beverage which is the accompaniment of our matutinal egg is a cup overflowing with deadly import at least to our teeth and those of our children. In the good old days when our Saxon forefathers drank malted liquor for breakfast, and sack or mead, post-prandially the teeth knew no decay, and toothdrawing was mainly employed as a means of extorting money from the Jews. Nowadays *nous avons change tout cela*, for the Jews now extract our teeth for the purpose of extorting money, and we drink tea while our babes consume away their teeth as a consequence. But this talk about tea drinking decaying teeth is all a craze. The tannin of badly made tea produces chronic dyspepsia and that depreciates the vitality of the individual, hence the decay of the teeth. The effect of tea when properly made and taken in moderation has never been shown to be prejudicial: indeed were we to listen to the wiseacres who hurl their "fads" into the daily and weekly press, we should eschew all forms of food, and sink starved, martyrs to prudent advice.

THE AUSTRALIAN DENTISTS' ACT.—Although we are not at present in a position to place the Act *in extenso* before our readers, we may give the gist of its provisions. There is a dental board, as we mentioned in a previous issue, and this consists of five dentists and three medical men who hold office for three years. The board is selected by the Governor in Council in the first instance, and the same authority possesses the power of removing at discretion any member from the Board. After the expiration of the first three years, the board is to be elected from the general body of dentists. A further effect of the Act will be the compilation of a Dental Register. All dentists whose names are registered in its pages will be liable to have them removed upon conviction for felony and misdemeanour. The fact of a name being upon this register will be taken as legal qualification for practice. Registration may be effected by (*a*) Only qualified medical men, (*b*) persons in *bona-fide* practice as dentists at the time of passing of the Act. (*c*) Persons, who, having studied dentistry for four years, and passed the examinations required by the Board, have attained the age of twenty. (*d*) Persons who having been in practice as dentists or apprenticed to dentists for six months prior to the passing of the Act, and who continue in the capacity for three years. (*c*) New residents in Victoria must produce proof of having practised dentistry for ten years, and of holding a diploma. The examinations will be based upon regulations framed by the Board and the Governor in Council will control the fees payable by persons seeking certificates. The provisions of the Act, as far as human reason can grasp them are not above criticism, and in all probability, the Act will need recasting. Some legislation, even if manifestly faulty, is better than none, and so we congratulate those who have so strenuously worked to get this bill passed.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

TREATMENT OF COMPLICATED CARIES.

By A. Morsman, M.D., D.D.S., Omaha, Neb.

The term superficial caries is applied to caries of the enamel; simple caries, to all cases involving the dentine when the pulp has not been reached or "exposed," in the technical sense; and the complicated caries, to all cases where the pulp chamber has been opened by the disease.

The first phase which we have to consider is "pulp exposure." The writer limits the term, pulp exposure, to the uncovering of a normal pulp, *i.e.*, a pulp healthy as to itself, but pathological as to its surroundings. All exposed pulps should, he thinks, be removed.

There is only one point to be gained by the ability to diagnose correctly a normal pulp and a pathological one when exposure has occurred, treatment tending to the same end in both cases, and that is that the treatment can be so modified as to be less painful and more rapid. Devitalization being a foregone conclusion, arsenic is the means to be employed, but while this remedy can be applied directly to an exposed normal pulp, producing rapid and painless work, some intermediate treatment is likely to be necessary if a pathological condition exist.

Dr. Truman has said that a combination of iodoform and arsenic would overcome this difficulty and could be applied to all cases without producing pain.

Cocaine has also been recommended, but has failed in the writer's hands in this connection. Inflamed tissue does not absorb, and cocaine only produces its effect by absorption. If the pulp is in a pathological condition, he would make that condition the primary consideration, and leave devitalization until a further sitting.

Arsenic cannot be absorbed except in a dilute form, because it is a powerful escharotic, destroying everything—absorbents and all—with which it comes in contact. It can only produce periostitis by escaping from the cavity or being applied to other tissues than that which it is intended to act upon. Poisoning is impossible, unless it be swallowed, and then only in quantities twenty times greater than it is necessary for us to use.

Under favourable circumstances, the pulp will die in from six to twelve hours, and so some prescribed from twelve to twenty-four hours. The writer allows it to remain in for one week, or three, if necessary, although he prefers to remove the application and the bulbous portion of the pulp as soon as it can be done without much pain—because he is afraid to leave so much dead pulp for the patient to carry longer than the appointed time. The removal of the bulbous portion of the pulp can be done with a sharp bur in the engine—not a small bur, but a large one. If this is done *without pressure*, the entire portion can be removed without pain, except a very little when it is first touched. There may be circumstances making it necessary to remove the fibres from the root canals at the same sitting. A second application of arsenic may not be necessary, but it can do no harm and is a provision against remaining vitality, justified by prudence. It is applied to the stumps and the cavity sealed. The final removal of these fibres by broaching can be made with but little pain.

The remedies used in this connection are too numerous to mention. Foremost among the few is carbolic acid, nearly full strength. This is used in all cases of pulpitis not of a greatly aggravated character, and it rarely disappoints. Relief from pain is almost instant if the application can be made without producing pressure. Usually one application of the acid and three or four hours' time is sufficient, but twenty-four hours' time is better, and sometimes several applications are necessary, at such intervals as are indicated by return of the paroxysm.

If the pain is relieved, wait before applying a devitalizer.

In aggravated cases of pulpitis and in suppuration carbolic acid may succeed, but will often fail. Oil of cloves, creasote, dryness and careful stopping of the cavity, thymol, menthol, answer best. Hot pediluvia and an opiate will often help.

Climatic changes make these cases very difficult to manage, and mouth-breathers are the worst subjects.

Do not hurry with the arsenical preparation.

Lesions arising from death of the pulp, are those of the periosteum.

Cases of periostitis, are of every degree of severity, and treatment must, therefore, be modified to suit the indications. In the early and most painful stages of the acute disease, the pulp cavity must be opened and the debris removed as well as the irritated condition of the tooth will permit, and this open condition must be maintained until the pain and tenderness subsides, when the case will most likely be reduced to chronic abscess. If, however, the painful stage has passed and the swelling is excessive, indicating that pus has formed, and if there are indications of pus in the soft tissues, perforation has occurred, and a deep incision will be all that is necessary for the present, the case presenting subsequently as abscess with fistula. If unhappily this point has not been reached, incision would do no good, and two methods are left; by the application of counter-irritants to hasten the perforation of the process, or "take the instant by the forward top" and make an outlet. In some localities this is easily done, and is not very painful. In either event the case will be an abscess with fistula.

Acute abscess is exceedingly troublesome. Then it is best to keep the canals clean by daily wiping and using some antiseptic, it matters little which, until the pain subsides.

Chronic abscess is of two varieties, called, for convenience, "with fistula" and "without fistula"; the latter is simply an older case, for abscess tends to produce fistula. The treatment of this form is: clean the canals thoroughly and force a cauterant through them out at the fistula. The other variety is less easy. In the large majority of cases cleanliness and antisepsis are enough. It is necessary to wipe out the canals and repeat this over and over again, until the canal is clean and dry; and it is well to wash them out with a solution of thymol in alcohol, using the same cotton-wrapped broach to introduce it; then fill the canal with cotton and the cavity with gutta-percha until the next sitting. In bad cases, use iodine or carbolic acid, but these are seldom necessary. As to immediate root-filling, only one sitting being given, there is not the slightest doubt but that a large percentage of cases can be successfully treated in that manner, but time is not often of such great importance, and that is the only thing gained. The writer does not believe in drilling root canals or in attempting to drill. He thinks there are only two materials fit to use for filling canals, oxychloride of zinc and chloro-percha.

DENTAL AMALGAM—PREVENTION OF CONTRACTION, ETC.

By Dr. S. K. J.

The object of this article is to show wherein and why so many of the dental amalgams of the past have failed from shrinkage, also to demonstrate a method of procedure whereby shrinkage may be overcome in the amalgams of the future. In the winter of 1861-2 Sir John Tomes, presented to the Odontological Society of Great Britain a report of a series of tests of amalgams in search of proof of shrinkage, non-shrinkage, or expansion. His method consisted in filling with amalgams holes made for the purpose in slips of ivory. Seven different amalgams were experimented with in filling said holes, six of which showed contraction. The seventh was an amalgam composed of copper and mercury only, which gave no evidence of shrinkage or expansion. In 1868, Mr. Mummery, stated before the same society that some amalgams expanded in hardening. In a communication to the *British Journal of Dental Science* in the winter of 1871-2, Mr. Kirby, stated that an amalgam made of pure silver and mercury only expanded greatly in hardening, to the extent of one-fortieth diameter or more.

In order to obtain exactness in measurements, Mr. Kirby used an instrument which on its face would indicate the successive measurements of the one-thousandth part of an inch of either contraction or expansion. In 1873, Mr. Fletcher suggested that shrinkage was not the only evil accompanying amalgam fillings, that the tendency in amalgam to assume a spheroidal or globular form is as great an evil. Three methods of procedure were adopted by Dr. Hitchcock, (Physical Properties of Dental Amalgams), an index pointer, constructed in a manner to pass over an area or circle which on its outer periphery or border line was made to indicate the successive measurements of the one-thousandth part of an inch of either contraction or expansion. Analysis showed composition of the amalgam used to be silver 40 per cent and tin 60 per cent. Within the first half-hour after a careful mixing with mercury and packing the same in the tube of Dr. Hitchcock's measuring instrument, the shrinkage amounted to .004 of an inch. After twenty-four hours the pointer on said instrument showed .045 of an inch shrinkage. Dr. Hitchcock's second test was with what is called Diamond Alloy. The analysis of this was given as follows: 31.76 silver, 66.74 tin, and 1.5 gold. In forty-five minutes it shrank .003 of an inch. In twelve hours it shrank .005 of an inch. Twenty-four hours showed no further change. The third test was with Hood's Alloy, 34.64 silver, 60.37 tin, 2.7 gold, 2.29 iron. In three hours it shrank .001 of an inch. In six hours .002 of an inch. In twenty-four hours more it remained unchanged. The fourth test was with Johnston & Lund's Alloy, 38.27 silver, 59.58 tin, 1.34 platinum, .81 gold. In fifteen minutes it shrank .001 of an inch. The fifth test was with Lawrence's Alloy, 47.87 silver, 33.68 tin, 14.91 copper, 3.54 gold. In two hours it shrank .001 of an inch. In four and one-half hours it shrank .002 of an inch. In thirteen and one-half hours .003 of an inch, with no further change in twenty-four hours. Sixth test—Moffit's Alloy, 35.17 silver, 62.01 tin, 2.82 gold. After one quarter of an hour it had shrunk .001 of an inch; after twelve hours .002, with no further change in twenty-four hours. Seventh test—precipitated silver and mercury only, in fifteen hours, expanded .002 of an inch; in twenty-four hours, .003; in thirty-nine hours showed continued expansion to .004 of an inch; after which no further change appeared. Eighth test —Townsend's Alloy, 40.21 silver, 47.54 tin, 10.65 copper, 1.06 gold. In five minutes it shrank .001 of an inch; in forty-five minutes, 002; in two hours, .003; in time not given, .004. Ninth test—Townsend's Improved Alloy, 39 silver, 55.65 tin, 5.31 gold. In fifteen minutes it shrank .018 of an inch. After twelve hours the shrinkage had lessened to .014. Tenth test—Walker's Alloy, 34.89 silver, 60.01 tin, 4.14 gold, and .96 platinum. In one-half hour it shrank .001 of an inch; in two and one-half hours .002; in twenty-four hours no further change. Review of this list of amalgams shows that the nine present more or less contraction, due, the writer thinks, to the absence of silver in sufficient quantity to prevent shrinkage. The silver averaged thirty-eight per cent.

A paper of Dr. Bogue's is quoted:—With special care each filling of amalgam preparatory for measurement was packed within a steel tube exactly one inch in length. According to the report given, the first filling of amalgam tested was prepared from Lawrence's Alloy, said to be composed of silver, tin, and copper. 5 degrees of contractions took place in two days. A second trial of the same alloy, with a little increase of mercury, showed a contraction of 5¼ degrees in 24 hours. The second alloy tested was Burlingame & Baker's Diamond Alloy, composed of silver, tin, gold, and platinum. 5½ degrees contraction in 24 hours. Third test—Johnston & Lund's Extra Alloy, composed of silver, tin, gold platinum, with a trace of cadmium. In twenty-four hours 5 degrees; after a week or more, 16 degrees of contraction. Fourth test—Walker's Excelsior Alloy, composed of silver, tin, gold, and platinum. First trial it shrank, in all, 8 degrees. Fifth test—Holmes' Star Alloy, composed of silver, tin, and gold, 5 degrees shrinkage. Sixth test—Arrington's New Alloy, composed of silver and tin. In twenty-four hours 4½ degrees. Seventh test—Townsend's Alloy, composed of silver and tin. Within ten minutes it contracted 13 degrees. A second mixing 8½ degrees of contraction in 24 hours. Eighth test—Fletcher's Platinum and Gold Alloy, yielding, on assay, these two different results: First, silver 37.63, tin 55.47, gold 3.6, platinum 3.3. Second assay: Silver 39.5, tin 55.4, gold 5.1, platinum none. This alloy required but a small amount of mercury to produce a plastic amalgam. Fifteen minutes after packing 2 degrees of shrinkage. No increase. Ninth test—Hood and Reynold's Alloy, composed of silver, tin, and gold. In ten minutes it showed 2 degrees of contraction. Tenth test—composed of copper precipated upon mercury. Twenty-four hours no contraction or expansion. Eleventh test—precipitated palladium. Next morning showed 9 degrees of expansion. Twelfth test—precipitated silver. ½ degrees shrinkage in 8 hours. After 24 hours 20 degrees of expansion. Hence Mr. Bogue got shrinkage in 9 amalgams. The 3 exceptions are, first, copper, which gave neither expansion nor shrinkage; second, precipitated palladium, which gave 9 degrees expansion; third, precipitated silver, yielding 20 degrees of expansion in 24 hours. A second point in Dr. Bogue's paper, is the variation in the amount of shrinkage, the greatest contraction being 16 degrees, the least 2 degrees.

One important fact made prominent by the experiments of Drs. Hitchcock and Bogue, viz.: Pure silver in combination with mercury sufficient to form a plastic amalgam is not, in that relation, a contracting metal when undergoing the process of crystallization, but, on the contrary, is expansive in its tendencies. Consequently, those evils which result from contraction in dental amalgams can be overcome by the use of a sufficient amount of silver to accomplish that purpose. Reviewing the above given facts, it is just to infer, viz.: To succeed in producing a non-contracting dental amalgam, less subject to discolouration than many are in use, that will not creep out or protrude from its position in a properly formed cavity, retaining in fair condition the corners and edges of fillings composed of such amalgam, it becomes necessary for the manufacturer to make use of the following combination or formula of constituent metals, the standard or unit thereof being fixed at one hundred, viz.: Eighty parts silver, fifteen parts tin, three parts platinum, and two parts zinc. The employment of a large percentage of pure silver prevents contraction. The employment of a small percentage of platinum and zinc in a good degree renders much aid in preventing discolouration of fillings. The small percentage of zinc named will not in any case develope galvanic influences to an extent that will be objectionable. An alloy produced in conformity with this formula, or with but slight variation from it, will result in producing a quick-setting amalgam, a quality that will render some aid in preventing a globular conformation of the mass composing a filling.

Review.

Aids to Dental Surgery, by Arthur S. Underwood, M.R.C.S., L.D.S., Eng. London: Ballière, Tindall & Co. 1888

The object of this little book is a very praiseworthy one: it is, as the preface modestly states, "to smooth the path of the dental student,"—a path which is, no doubt, apt to look very rough and uneven to the average jog-trot student mind. Considering the somewhat tedious and occasionally involved style of the text-book, which at present forms the only safe, if not royal, road to the desired learning, any aid which would make the travelling easier would be a real boon—and would be especially welcome to those, and their name is legion, who are more or less deficient in the faculty of themselves summarising their acquired knowledge, and of marshalling their facts in such well-ordered arrangement as to be able to make due use of them, at a moment's notice.

Such an aid—or to be more correct, such "aids"—are proffered to the student in Mr. Underwood's little volume; and that it may prove of real value in this direction, we can scarcely doubt.

In a book of only 100 small pages, which does not profess to do more than epitomize subjects dealt with at large in standard text books, one does not expect to find much that is original, and it is therefore a pleasant surprise to meet, as one does, not only with passages presenting old facts and theories in forcible and original language, but also with an appreciable amount of matter, which, if not entirely new, has never yet appeared in a collected form.

The *resume* of the present state of knowledge on the subject of caries, brief as it is, is admirably clear and comprehensive, and modest withal, considering the important nature of the author's own researches; the passage on erosion is good; and no one reading carefully the three pages devoted to pyorrhœa alveolaris can have any longer an excuse for confused ideas about that disease. The latest classification of odontomes is given, and the passages on mercurial and syphilitic teeth are remarkably lucid and to the point.

We are only sorry that the book as a whole is unequal; for whilst many of its pages, besides those to which we have especially alluded, are admirably written, the same cannot be said of all.

It is, for instance, disappointing to find a writer who has paid so much attention to the subject of dental neuralgia, giving such a one-sided account of that affection as Mr. Underwood does; it is strange, to say the least, to find absolutely nothing said about the differences, marked and important as they are, between acute and chronic inflammation of the pulp; and to refer to alveolar abscess without describing its symptoms and without mentioning treatment except in words which imply that extraction is the only course possible, is a serious defect.

These, and a few other less important deficiencies, compel a word of warning to the student. He cannot fail to benefit much by the perusal of these "Aids," but he must not entirely trust to them as complete and infallible.

The book is fairly free from misprints. The printer's reader has no doubt been to blame for allowing "discharges" to be "put up" (p.77) and teeth to be "germinated" (p.82); but he can scarcely be responsible for the glaring mistake (p.95) which fathers on Sir John Tomes the recommendation of a mixture of "one part of glacial carbolic acid to eight parts of liquor potassæ!"

Note Book for Dental Students (Dental Anatomy and Physiology,) by James Rymer, M.R.C.S., L.D.S., Eng. London: J. & A. Churchill, 1888.

This is a small book in which it is attempted to lay before the student the leading facts of Dental Anatomy and Physiolin a condensed and intelligible form. Mr. Rymer has succeeded in making his Note Book serviceable we feel sure to the student who wants to rapidly revise the main facts of this branch of his studies. At the same time we often feel that clearness of diction is sacrificed for the sake of brevity. This, however, is a fault common to all the vast numbers of Guides and Note Books, with which the medical profession especially is inundated. Mr. Rymer's book certainly takes a high position amongst the group to which it belongs.

Dental Metallurgy. A Manual for the use of Dental Students, by Chas. J. Essig, M.D., D.D.S., Professor of Mechanical Dentistry and Metallurgy in the Dental Department of the University of Pennsylvania. 2nd Edition, revised. Philadelphia: The S. S. White Dental Manufacturing Co., 1888.

It is not often we meet with a book which meets so well the requirements of those whom it is destined to serve. And we feel justified in particularly recommending this book to dental students. There is no book published in Great Britain specially devoted to the requirements of the dental student, and the conscientious student finds himself compelled to wade through long and tedious chapters out of current text-books of Metallurgy; in the end he gleans but few facts bearing directly on *dental* metallurgy. Professor Essig's book deserves to be a favourite text-book with our students. The practitioner will also find many facts of help and interest in the book.

Dental News.

PASS LIST OF ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF EDINBURGH.

DURING the April sittings of the Examiners for the Licence in Dental Surgery, Alfred Edward Donagan, Cambridge; Edward John Montague Hodgkinson, London; Thomas Gregory, Edinburgh; John Steven Walker, York; Robert Keith Common, Edinburgh; Kevin Emmet O'Duffy, Dublin, and Thomas Cuthill Mc. Kenzie, Edinburgh, passed the First Professional examination; and the following gentlemen passed the Final Examination and were admitted L.D.S. Edinburgh:--George William Welham, London; Herbert Bycroft Egard, Bath; John Stephen Walker, York; and Kevin Emmet O'Duffy, Dublin.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

ADVERTISING.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

May I be allowed through the medium of your Journal to lay before the members of our profession generally, and those interested in the question of advertising particularly, a curious case relating thereto, and offer a few remarks.

In the *Daily Telegraph* for some time past there has appeared a nicely worded advertisement setting forth the many advantages to be obtained by the innocent British public by patronising an American Institute, (Limited) with a Secretary and a long list of nine practitioners, all with American qualifications, their names being prefaced with the familiar "Dr."

Now, Sir, I have examined the "Dentists' Register," and the "Medical Directory," but cannot find the mention of any one of these American cousins. I should like to ask, therefore, the British Dental Association who are supposed to look after the interests of the profession, by what legal right these Yankees are allowed to practice and advertise in our midst. And, is this not a question for the Medical Council.

Only a few months ago these senators sat in solemn council on a poor blind man, and after taking the highest legal opinion, declared he had been guilty of disgraceful conduct, and ordered his name to be erased from the Register.

Surely a mountain was in labour and brought forth a mouse! Look underneath the advertisement alluded to, and you will find the one disgraced and removed. advertising as if nothing whatever had occurred. Has the Medical Council been beaten, or are these gentlemen in office, but not in power?

I am sorry to have taken up so much valuable space, but must ask a little more to repeat a suggestion already made to remedy all this, viz., the formation of a legally constituted body of *bona-fide* Dentists, with full power to look after and protect our interests. Why not have a Royal College of Dentists? How can we be expected to have confidence in a Council who prosecutes an L.D.S.I., for advertising, but permits nine qualified foreigners to do so under their very noses without the slightest protest, and yearly grants Diplomas to persons who may do so with impunity.

All should possess the right to advertise, or none.

I enclose card, and am, Sir,
Yours truly,
"ELEVATOR."

[We believe the matter will not be allowed to pass unnoticed.—Ed. B. J. D. Sc.]

"AN EXPLANATION."

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I should like to see Dental Education transferred entirely to the Medical Schools, and I have no doubt this will eventually occur. In due course I will open the matter in the Dental Press.

I am happy to explain to you why my paper on this subject was announced for the Odontological Society's meeting and then withdrawn. You may be aware that papers for the Odontological Society should bear upon Dental Science pure and simple. A few exceptions could be quoted from the past, but in my own judgment these exceptions were unwise. At all events I cordially accepted a hint from the Censors that I should seek publication of my paper elsewhere. My only desire in offering the paper to the Odontological Society was to permit some of my contemporaries to urge their own views personally.

The subject, however, is not confined to Dental spheres, and it was of small moment to me where the point was to be first broached.

I am, dear sir,
Yours obediently,
F. NEWLAND PEDLEY, F.R.C.S., L.D.S.
Dental Surgeon, &c., Guy's Hospital.

British Journal of Dental Science.

No. 489. LONDON, JUNE 1, 1888. Vol. XXXI.

ALL PORCELAIN BRIDGE AND CROWN WORK.

By E. Parmly Brown, D.D.S., Flushing, N. Y.

The words "all-Porcelain" as used in relation to this new system of Bridge and Crown Work, simply mean, that nothing but porcelain is in sight in the mouth, or comes in contact with the oral secretions and the gums, as all the metal used in this system of all-Porcelain Bridge and Crown Work, is baked invisibly through the centre of each tooth on the bridge in the form of a bar, and extends from one or both ends of the bridge at the approximal side or sides, in such a manner as the case demands for proper attachment; and in the crowns all the metal is in form of the root-pins.

These bridges are usually attached by having the extending ends of the invisible metal bar embedded in gold fillings in the approximating natural, or "pier" teeth; again, by having the extending ends of the bar running into gold-cap crowns on the approximating natural bicuspid or molar teeth, through holes made in the approximal sides, and being bent at right angles, thence running into the root canals, where the nerves have been removed, or embedded in the fillings within the crown where the nerves are alive; and again, by having the extending ends of the bar running into the approximating sides of the porcelain crown and thence, turning at right angles within the crowns, and running through them and into the natural roots, to which the crowns are attached, thus forming root-pins, which are continuous with the bar running through the bridge. These are the three modes by which these new all-porcelain bridges are attached. All the attachments—usually two, but more in large bridges—may be made by any one of these modes, or by any two, or by all three in combination. There are, however, many variations from these three modes of attachment. When bridges extend both sides of a "pier" tooth, the bar may be "saddled" across it, embedded in a gold filling, or running through a porcelain or gold crown; and again, the bridge may extend back from the pier tooth, (where it is the last posterior tooth remaining) with no supports on the posterior, thus being held on one "pier." There are many other variations, and they may be used in any combination, in any bridge, demanded by the case.

The bridges in all cases rest firmly and solidly on the gums, thus deriving additional support, and preventing the accumulation of food impurities where it usually takes place, between the gum and the bridges; and the porcelain teeth coming tightly in contact with the gums in the form of the finger ends—the labial surfaces representing the finger nails—ensures a perfect condition of health and cleanliness. A great feature of strength is that all the teeth of the bridges, including porcelain crowns where such are used, are united on the approximal sides by having an additional amount of body put on between the teeth before the baking. Thus these bridges are continuous dentures of porcelain, with metal bars extending through the centres.

The metal bar—platino-iridium, square or flat, 13, 14 or 15 gauge—is buried invisibly in the centre of the teeth, by having slots or grooves ground in the back surfaces of the plate-teeth, which are always used, as others would not stand the baking, and in this case are the thick, posterior teeth, the bar then being fitted in, the tooth body applied giving the proper contour to the back part of the tooth for cleanliness and strength, and the bridge being baked or, where the thin anterior teeth are in use, by having the teeth riveted on the bar, or held thereon by having their pins bent upon the bar, a slide being ground for its reception when necessary, the body being applied and the bridge baked. This baking is done in the ordinary continuous gum furnace, the bridge being held on the slide by having one of the extending ends of the bar held in a hole drilled in the slide, or by having the bridge held on a platina rack made for the purpose on the slide.

The new all-porcelain crowns for incisors, canines, and bicuspids, and used extensively in combination with the bridges, have platino-iridium pins baked in them, and the tooth material extends on to and around the pins, giving great strength at the cervical portion—the point of greatest strain--and fitting closely to the prepared root when ground, fitted, and inserted. The platino-iridium pins are of an improved form, and the strongest ever known, being broadest in a direction from the faces to the backs of the teeth, broadest at the cervical, the point of greatest strain, and thence tapering to a point at the ends, and being broadly flattened in an opposite direction, laterally, within the crown itself, thus not allowing any portion of the pins to come near the surface of the crowns, as the pins therein take the form of the crowns to a nicety. These crowns have one pin for incisors and canines, and two pins for bicuspids.

The citation of a few cases will convey some idea of the practical nature of this bridge work aside from its superiority over any other form of tooth substitution, in natural appearance, strength and cleanliness.

Hundreds of bridges have been inserted by the inventor in the last three years ranging from one tooth to twelve teeth, with a percentage of success never equalled by any other dental work known to him.

The two most hazardous cases done, were two upper 1st bicuspids fastened to only one pier each—to gold fillings in the 2nd bicuspids—and not being attached to the canines, floss silk could be passed around the teeth to insure extra cleanliness! The first case, for a lady, was attached to an old gold filling by its being cut into for the admission of the bar, and the replacement of the gold over the bar for its retention. This bridge has been in for over three years, and is in all respects, perfect. The second case for a dentist, was anchored in a new gold filling at a public clinic one year ago, and is as firm and perfect as when inserted.

The single tooth bridge attached to the two approximating teeth by gold fillings holding the ends of the bars, is the most common form done. It is always a great success, the strain being slight.

When the bars are thus attached to gold fillings, the gold is first well anchored in retaining pits and under cuts with the electric mallet, and is built well up to the margins of the cavities, forming "boxes" to receive the bars, which are finally covered over with gold, and the fillings finished as usual. Nos. 30 and 60 rolled gold, are most advantageously used for these fillings, the rubber dam being applied in every case. From one tooth to seven teeth in a single span have been most successfully inserted by such gold filling anchorages.

The first bridge ever inserted, done over three years ago, was exhibited to some dentists at the office of the inventor, while this paper was being written. It was an upper 1st bicuspid in a lady's mouth, being "winged" on to a gold crown, on the 2nd bicuspid, by having the bar extended therein, with no attachment to the canine on the other end, thus permitting the floss silk to cleanse readily. The gum in contact with the bridge tooth was in a perfect condition of health, and to all appearances, the tooth was growing out of the gum.

Where roots are used as piers, banding or capping can be done at the option of the operator. Attachments are best made to the anterior roots by crowning them with all porcelain crowns, such as described heretofore—using a good oxy-phosphate cement, the crown pin in most cases being continuous with the bar of the bridge ; and to posterior roots the attachment is best made by capping them with gold crowns, to which the bridge-teeth are connected in any of the ways already described.

The two most extensive cases, one of twelve and the other of eleven teeth—were done about a year ago ; and illustrating how many teeth may be attached to few "piers," both bridges are as firmly in place as when they were inserted. The first bridge was attached to four teeth, the two canine roots being covered with all-porcelain crowns baked continuous with the bridge, the bar at one extremity being anchored in a gold filling in a molar, and the bar at the other extremity running into a gold crown, and thence into the root canal of a molar on the opposite side. The second bridge was attached to only three teeth, in the same manner as the first, except that it was attached to only one canine root instead of two. The gum in both cases kept in a perfect state of health, hugging around the cervical portion of the teeth, and festooning between the porcelain teeth to a considerable extent. To illustrate more fully this point of health and natural appearance of the gums around the porcelain bridges, where they are well known to keep in a very unhealthy state under the gold bridges, I shall cite a case of a bridge done for a dentist three years ago. It was a single tooth, the bar being anchored in gold fillings, and the tooth itself being made extra long and plunged into the socket from which the natural root had been extracted at the same sitting. This case was shown about five months afterwards at a clinic, and the bridge tooth looked as if it were growing out of the gum, no absorption whatever had taken place, and the gum was perfectly healthy.

The few failures therefore only go to prove the system correct in every respect as now perfected. Where too small a bar was used in the experimental stages of the work, a loosening of the bars in the fillings resulted, and where the baking was imperfect, the teeth would break from the bar; but even these accidents occurred only in three or four cases out of several hundred inserted. In one instance where a superior central and lateral, were attached to a central root in the form of a crown, and the other end of the bar anchored in an old gold filling in the approximating natural canine, this canine pier-tooth broke off two and a half years after the insertion, it having in it a large amalgam filling extending far under the gum. It required an hour for the removal of this bridge after the canine broke off, the bar and root-pier finally having to be cut through after attempts were made to break the teeth with a small hammer and to cut them off with corundum wheels. A new bridge was inserted, with the two roots crowned as piers, and was a great success.

Singers, lawyers, ministers, dentists, teachers, public speakers and others have laid aside their annoying plates, and had these bridges inserted with the greatest satisfaction to themselves and the operators; because, aside from the improvement to the vocal and the masticatory organs (and consequently to the general health) comes the perfect truth to nature, the pure breath, and the avoidance of damage to the remaining natural teeth which plates will produce.

The minor details of construction, which are the most difficult parts of the work, can only be obtained from special instruction by one who has been thoroughly over the ground, or by many perplexing failures with experience as the teacher, which latter method is the far more expensive, but the only one by which the inventor could reach the golden results.

DISEASES OF THE PULP AND THEIR TREATMENT.*

By Mr. P. MOUNTFORD.

MR. PRESIDENT AND GENTLEMEN,

It was, at first, my intention to treat of the several diseases to which the pulp is liable, but upon furthur consideration I came to the conclusion, that in attempting to discuss so comprehensive a subject in the time at my disposal my paper would be very bare and superficial. This being so, the best course seemed to me to take up only the practical portion of this subject, taking, as the title of my paper—"Treatment of exposures of the Pulp."

The subject will at once commend itself to you as being worthy of our consideration, for there is scarcely a single patient who comes to us requiring our services as conservative dentists who fails to bring us one or more members of his dental armament in which the pulp has suffered. I also hope the paper will lead to a good discussion; so bringing about one of the greatest advantages to be derived from these meetings.

Exposures of the pulp are usually caused,

Firstly. By the progress of caries, or, as the result of fracture of the tooth.

Secondly. Through our own carelessness or misfortune whilst preparing the tooth for filling.

I purpose dividing the first class into, (*a*) those cases in which we find the pulp alive, and (*b*) those in which the pulp has died, as our treatment in each will differ.

We will first take

(*a*). Those cases in which we find a living pulp.

Whenever caries has proceeded to any depth it will be advisable to keep a sharp look-out for an exposure, as it is by no means an unheard of occurrence for a tooth to have been filled one day, and on the next or second day following the operation, for the patient to have returned suffering considerable pain, and, perhaps, with the face much larger on the side the tooth was filled than on the other, and when the filling has been removed, and the cavity more carefully examined to discover a small exposure. This is a serious matter, one likely to bring disrepute on filling. To obviate the possibility of such an occurrence, Mr. Coleman advises that "during the progress of excavation clean cotton wool should be more than once introduced into the cavity, and, when it has been removed, the sense of smell will seldom fail to detect any existence of discharge." He goes on to say that "liability to the opposite error, may, however, arise in cavities close to, or below the gum, where the latter has bled and its serum become decomposed in the cavity, when the same stench is afforded. In such doubtful cases the cavity may be purified by permanganate of potash and then, after a little time fresh cotton applied, which will be sweet or otherwise, according as discharge exists, or not." Still, even this will not always be sufficient, for an exposure may exist and there be no unpleasant discharge. In cases where I have the least suspicion that there is an exposure, I probe the dentine covering the pulp cavity with a bristle, as well as using a small pledget of wool as stated, thus making doubly sure that no exposure exists. In the great majority of cases, however, where we have an exposure to deal with, there will be no difficulty in diagnosing it; thus, if the patient has suffered pain of a throbbing character, it will point to acute inflammation of the pulp, due to an exposure. Again, the pain may have been dull and continuous, a paroxysm being usually brought on through taking hot or cold fluids, sweet or salt substances into the mouth, which will point to chronic inflammation of the pulp.

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* A paper read before the Students' Society, Dental Hospital of London.

Then again, we may take a small plug of wool; if this, when pressed into the cavity causes the patient pain, there is an exposure. This leads me to remark that it is quite unnecessary, and in fact cruel, to take a pointed instrument and probe the cavity to find whether the pulp is exposed or not, for a small plug of wool, used as I have just mentioned, will prove it quite as well without giving the patient a quarter of the pain.

Well, we will now suppose we have a case in which the pulp is exposed and alive; our first consideration will be, is it possible to bring the pulp into a healthy condition, and save it? In certain cases, I think, we shall be able to do so.

If the patient is enjoying good health and has not had a really bad attack of pain, and after careful excavation the exposure is found to be not very large, also the dentine around not badly affected, I would endeavour to save the pulp by dressing with oil of cloves, or dilute carbolic acid, changing the dressing daily at first, until no discharge occurs; then at once fill, capping the pulp with blotting paper which has been dipped in oil of cloves, or with a paste, made by mixing zinc oxide with oil of cloves, and filling the tooth with osteo.

Dr. Allport, of Chicago, a skilful dentist, has proposed, and professes to have practised with a success entirely satisfactory, the following delicate operation: exposing fully the pulp, he takes out of the body of the organ a V-shaped piece, afterwards bringing the lips together, and retaining the apposition so as to secure an immediate union.

In most cases, however, of exposure by disease, we shall find the mischief has extended further than that before mentioned; in these cases I consider it best to devitalize, rather than run the risk of its dying, and setting up inflammation of the alveolo-dental membrane, or perhaps abscess.

This brings me to the question, with what shall we devitalize? Bristles, wooden points, cautery, arsenious acid, and other agents may be used. Extraction of the living nerve whilst the patient is under the influence of nitrous oxide, is, in simple cases, a good method; but, in ordinary cases, I believe arsenious acid to be by far the best. A mixture of arsenic and morphia is sometimes used, but there is no apparent advantage obtained from the use of this over the arsenic alone. In the application of an arsenic dressing the following points should be strictly observed, viz.,

(i.) Only just sufficient to devitalise should be used, usually 1-16 gr. is enough.

(ii.) The pulp must be thoroughly exposed, and the dressing placed directly on it.

(iii.) The cavity to be thoroughly sealed.

(iv.) Great care to be taken that none of the escharotic finds its way out of the cavity to the gum, or sloughing will be produced,—nor to the alveolus, or necrosis will result.

Except in those cases which are very easily got at, I am certain it is best to apply the rubber dam to the tooth to be dressed, if this is done we shall be much more likely to place the dressing on the exact spot; also to seal the cavity, and it will hardly be possible for the escharotic to get to the gum or alveolus.

On the next or second day afterwards the patient should be seen, when, if our dressing has been successful, the sensitiveness will be entirely gone, we may now either remove the pulp, or, as Mr. Tomes recommends, "insert a dressing of tannin, and leave this for several days ; this will have the effect of hardening the pulp so that it will be easier to pull it out in one piece."

The pulp having been extracted, the question now arises, are we to enlarge the canals ? I am of opinion that whenever it is practicable it should be done, as it will be easier to fill the root, our filling will also be more certain to reach the apex, an essential to successful root filling.

The subject of enlarging the canals and root filling I shall take up in greater detail in the next part of my paper, but before passing on, I would remind you as after devitalising the pulp the canals are free from septic matter, how great should be our care to keep them so; no saliva should be allowed to get to them, every instrument before using should be asepticised and the canals *at once* filled.

I now come to the consideration of

(*b*) Those cases in which the pulp is found to be dead and in a state of putrefaction.

If our treatment of this class of cases is to be successful, the following points must be strictly observed.

(i.) To remove all decomposed tissue.
(ii.) To render canals aseptic.
(iii.) To fill the canals to their apices.

Let us examine each in the order named.

(i.) To remove all decomposed tissue. How is this to be accomplished ? In the first place, I would say be sure sufficient of the crown of the tooth is removed that a bristle or canal-drill may be passed readily up each canal. This is an important point, and one often overlooked, giving the operator much extra trouble. In some few cases it will be found the better plan to make a second cavity in the crown of the tooth, immediately over the pulp chamber, rather than to enlarge that already existing.

We now come to the question of the canals.

When referring to the treatment of those cases in which the pulp has been devitalized by ourselves, I said it was advisable whenever practicable to enlarge the canals ; if advisable in those cases, how necessary is it when the pulp has died and is in a putrefactive condition, for I fail to see how it is possible to remove the whole of the diseased tissues without doing so.

The opening up of the orifices of the canals is now easily performed with the cone-shaped burs introduced by our President. In enlarging the canals much care is necessary, only slight force should be used or the head of the bur may become impacted and snap off. This may be a serious matter, for if it happen high up it is impossible to remove it; the liability to such an accident clearly points out the desirability of asepticising our drills before using them, and so reducing the risk of trouble arising should we meet with such an unfortunate occurrence. The occasional use of a bristle will guide us as to the direction of the canal and so help us to keep clear of the serious accident of drilling through the side of the root; the possibility of this happening will also prevent our using much force.

A fruitful source of mischief is the forcing of septic matter through the apex, this should be carefully avoided; and the risk of alveolo-dental inflammation arising, should it happen, is minimised, if our instruments are clean and aseptic before being used.

In certain cases, however, we shall not be able to be as thorough as I have set forth, for we meet with canals so small that they will not admit a bristle. In these cases we may leave them alone; in others, the roots are so twisted that drilling for any distance is quite out of the question, we must here remove all the septic matter we can with broaches and bristles, after enlarging the orifices of the canals, if, after doing as much as possible in this way and dressing with antiseptic dressings, we are not able to bring about a healthy state of affairs, the performing of Rhizodontropy is left to us, which will allow the escape of any discharge which may form.

This brings us to consider the second point, viz.

2. Rendering the canals aseptic.

As we have so many antiseptics to choose from, no doubt some will prefer one, some another for dressings, I hope many of us will give our experiences in this matter. I have found nothing answer better, if as well, as eucalyptus and iodoform. Another antiseptic which is not used as often as it should be is hot-air.

Upon the advantages or disadvantages of dry-dressings I have nothing to say, having had no experience of them; perhaps this subject will be turned to our advantage in the discussion.

Now as to

(3) Filling the root.

At present, I have not had sufficient courage to immediately insert permanent root-fillings except in those cases in which I have devitalized the pulp with arsenic, or extracted the living pulp, but in all other cases prefer dressings before so filling.

The chief qualities necessary for a root-filling are

(*a*) To seal the canal absolutely.
(*b*) To be easy of introduction.
(*c*) To be easy of removal.
(*d*) To be non-irritant.

Gold, tin, and oxychloride of zinc although valuable as root-fillings, do not possess all the qualities I have said are necessary, for if, notwithstanding all our care, trouble should afterwards arise, they would not be easily removed.

Again, many use gutta percha dissolved in chloroform, but this, if pumped through the apical foramen might set up irritation.

Wool, soaked in carbolic acid or other antiseptic fluid, being porous, would not seal the cavity. But, thanks to our President we do possess a root-filling having all the above necessary qualities. I, of course, refer to Iodoformed wax; every case where I have used this root-filling, as far as I know, has been successful. Its advantages over gold are, its being easily introduced, easily removed, and also possessing antiseptic qualities.

Mr. E. Lloyd Williams has published the formula of a root-filling having similar qualities, but instead of iodoform it contains iodol, which has not the unpleasant odour the former has, but whether it possesses antiseptic qualities to so great a degree seems to be doubtful. The constituents of this root-filling are paraffin, spermaceti, yellow wax, iodol, and carmine.

I have not much to say with reference to the second class into which I divided exposures, viz.,

II. Those brought about by our own carelessness or misfortune whilst preparing a cavity for filling.

This is a very unfortunate accident, one it is not always possible to avoid. It is a pity it should happen, for it would have been better rather to have left a layer of softened dentine over the pulp, as a cap, taking great care, of course, to thoroughly disinfect it in order to prevent further decomposition, and have filled the cavity with osteo as a temporary arrangement.

Notwithstanding all our care, however, we may have the misfortune to enter the pulp-cavity, wounding the pulp and causing it to bleed. Usually the pain is very acute, but soon passes off; sometimes the pain felt is very slight.

It was the practice, I believe not long ago, it may be so even now, of some to destroy pulps exposed in this manner; but this seems unjustifiable, for, from what I have seen of these cases, if care be taken to exclude the saliva, also not to allow the exposure to be open to the air for any unnecessary length of time, and no pressure be exerted when placing the cap into position, or when inserting the osteoplastic filling over it, the pulp will remain alive and healthy.

ON SOME PRACTICAL POINTS IN THE PHYSIOLOGY AND PATHOLOGY OF THE FIFTH PAIR OF NERVES.

By T. Stretch Dowse, M.D., F.R.C.P.Ed.

(*Concluded from page* 474.)

There are some forms of neuralgia of the fifth nerve and headache in women which certainly seem to be intimately connected with, if not absolutely due to, uterine and ovarian irritation. We learn from the Gulstonian lectures of Dr. Symonds, that an analysis of cases of headache shows a large preponderance in women, and of these about half referred to their monthly health as in some way connected with the attacks. It had been noted that supra-orbital neuralgia and megrim have been completely interrupted during pregnancy, and renewed again some time after delivery with unusual severity, and this supports the general impression that there is some real connection between the attacks and the catamenial function; but, says Dr. Symonds—and I quite endorse the conclusion—"My conviction is that the menstrual function only acts as an exciting cause on an antecedent constitutional or neurotic susceptibility." There are some physicians who believe that an ulcerated os uteri may, and does in fact produce, many of the neuralgias common to the fifth pair of nerves. That such a condition is possible no one can deny, but these are unquestionably rare. If intestinal worms or ovarian irritation can give rise to ptosis and squint and ataxy, or even mental perturbation, certainly uterine irritability from any source must be placed in the same category.

Before I commence, what I may venture to state, is the most interesting part of my paper, I must, if you will kindly permit me, in the briefest manner possible, draw your attention to the trophic influence possessed by the fifth nerve. I have told you that the trophic root of the trigeminal nerve arises (Merkel) from a mass of cells at the side of the aquæduct of Sylvius, or, as some physiologists would have it, the trophic fibres originate in the Gasserian ganglion itself; it does seem pretty clear anyhow that trophic fibres do exist, and that they have a great deal to do with the gums and their mucous membrane, and with the tooth pulp. We have clear evidence of the influence of trophic nerves in association with derangements of nutrition through a feverish cold, such as we find in herpes of the lips, nose, cheeks, or buccal mucous membrane, the herpes consisting of a closely packed group of vesicles; then, there are the varieties of stomatitis, erythematous, follicular, ulcerative, and phagedenic. I had at one time five children in hospital suffering from charbon, a very rare form of disease, clearly due to trophic derangement of the fifth nerve. The cases were fully reported and illustrated in the *Medical Examiner* some years ago. These children had suffered from measles, and were in a very low state of vitality; but why these parts, namely, the lips, the gums, and the teeth, should undergo such rapid necrosis I am at a loss to know.

Dr. Latham (*Lancet*, April 24th, 1886,) in his Croonian lectures on Gout, Rheumatism, and Diabetes, remarks: "Among the peculiar local affections connected with gout, we have, as pointed out by Graves, congestion of the lobes of the ear, a singular affection of the teeth which consists in an insuperable desire to grind them, daily paroxysms of intense heat of the nose, which continue for three or four hours, the part becoming first of a bright and then of a purplish red colour,—all these symptoms may be ascribed to irritation in that portion of the nervous system where the roots of the fifth nerve and the vaso-motor centre are in close proximity, namely, in the medulla oblongata." I might say that in my own experience, in initial locomotor ataxy, and general paralysis of the insane, my patients have frequently complained of want of normal sensibility (dysæsthesia) in the teeth, so that when they were brought together the impression was conveyed that they might be made of india-rubber, and several of my patients have complained of great annoyance from the feeling of creeping over the skin of the face supplied by the fifth nerve.

I am now, gentlemen, about to call your attention to certain matters, with which, if you are not already acquainted, I think you ought to be familiar, and I tell you candidly that I feel myself like treading upon virgin soil, that is to say, if I may take a most excellent work like that of Gowers, "On Diseases of the Spinal Cord," as proof of the most recent advances in neuro-pathology. You are all of you possibly aware of the existence of a disease known by the name of locomotor ataxy, but I must tell you at once that ataxy in locomotion does not always exist. We have many objective and subjective signs and symptoms, however, connected with this disease, which, if my ideas are correct, should be of the greatest possible importance to the dentist. Please let me remind you that this fifth nerve, which is fraught with illimitable interest, is really a spinal nerve, and its sensory connections are so extensive, and its reflex relations so vast, that we can scarcely conceive an essentially sensory disease like that of locomotor ataxy to exist unless the fifth nerve were involved. Now the involvement of the fifth nerve in locomotor ataxy has never been recognised to the extent that I think it ought to be. Professor Pierret, of Lyons, was the first to call the attention of the profession to the subject, in cases of ataxy associated with cervical-occipital neuralgia. Gowers says (p. *loc. cit.* 313): "Degeneration of the ascending root of the fifth nerve has been found (first by Westphal in 1864) in cases in which symptoms were present in the area of its distribution," and "Pains may be felt in the region of the fifth nerve" (p.299); but it does not seem to have struck neurologists that inveterate neuralgias of the fifth nerve are in part due to sclerosis of the ascending fibres which run into the trigeminus from the posterior horn of the cervical spinal cord. I was visiting two patients within an hour of each other—one was suffering from the lightning pains of locomotor ataxy and rubbing the skin from his thigh, so great was the agony; the other was in the wildest torture from tic of the gums and parts supplied by the infra-orbital nerve. Now the definition of the pain in each case was precisely similar; it came on without the slightest warning, it was of the most severe and intense character, and left much in the same way that it came. There can be no question of doubt in my mind between the absolute relationship of these pains, namely, the pains of locomotor ataxy, and the pain of facial tic, with or without muscular spasm, and known as tic-douloureux. If you are not acquainted with the leading features of locomotor ataxy, I must ask you to pardon me whilst I draw your attention to them; for, depend upon it the more the profession of the dentist advances, the more necessary will it be for him to be conversant with the kindred sciences both of surgery and medicine, for these departments of the art of healing are all dependent the one upon the other, and the sooner this is recognised to its fullest extent the better will it be for the profession of dentistry. If, as Mr. Jonathan Hutchinson says (and no better authority can be found,) "the department of medicine overlaps that of surgery," surely the departments of medicine and surgery must overlap that of dentistry; the time cannot be far distant when the profession of dentistry must merge into that of medicine and surgery. I am now going to prove to you the truth of this assertion.

In locomotor ataxy we have a disease more subtle than any other with which I am acquainted, and I am not going to weary you with anything beyond the merest outline of its more prominent signs; but I wish you would study all that has been written about it, and endeavour in the daily practice of your profession (which I am sure you must have opportunities of doing), to investigate carefully those states of the second and third divisions of the fifth nerve which are associated with pain and defective nutrition of the teeth and gums, and those severe neuralgias which I feel sure are connected with derangement, if not of sclerosis, of the central sensory apparatus of the fifth pair of nerves.

Let me draw your attention to the prominent signs of this disease.

Ataxic movements.
Fulgurating pains.
Localised hyperæsthesia.
Ocular paralysis.
Numbness and other dysæsthesia.
Anæsthesia.
Staggering with closed eyes.
Failure of sexual power.
Absence of tendon reflex.
Rectal and vesical pareses.
Gastric crises.
Laryngeal crises.
Vesical crises.
Severe arthropathies.
Amaurosis.
Complicating transverse myelitis.
Spinal congestion.
Paralytic dementia.
Vesical catarrh.
Pupillary changes.

Of these signs I am only going to draw your attention to—

Pupillary changes.
Ataxic movements.
Fulgurating pains.
Severe arthropathies.
Absence of tendon reflexes.

First, with regard to changes of the pupil of the eye. The pupil regulates the amount of light entering the eye, and contracts strongly in a bright light, and dilates when the light is feeble. In ataxy the pupils are invariably very small, dilate sluggishly, if at all, but they contract when the eye is accommodated for a near object; again, one pupil may be very large, whilst the other may be very much contracted. Hutchinson says this pupil is pathognomonic.

Second, with regard to ataxic movements. The patient is unable usually, (this is not always the case), to maintain his equilibrium in the dark, or when he is made to stand erect with the eyes closed, or he feels himself losing his balance when washing his face.

Thirdly, *Fulgurating pains* are in my experience very diagnostic of this disease, and I have called your attention to the fact that these fulgurating pains are in their character and intensity precisely analogous to the pains of the face due to the fifth nerve, and known as tic. Then, the question I would ask is this : is inveterate neuralgia of the face due to sclerosis of the cervical branch of the fifth nerve, to its nuclei of origin in the medulla, to its connection with the sensory trigeminal nucleus which lies at the level of the pons, or to its ganglia ? or, on the other hand, is it essentially peripheral? This is of somewhat novel import, and worthy of serious consideration, if not of general acceptation. I maintain from analogy, then, if you please, that the lightning pains of the limbs, which we consider as common to sclerosis of the posterior columns of the spinal cord are identical in character and causation with those pains of the sensory divisions of the fifth nerve, and known as tic of the face, epileptic neuralgia, and tic-douloureux.

Fourthly, *Severe arthropathies.* Associated with some cases of locomotor ataxy we find a peculiar state of the joints, known as Charcot's joints. The change is characterised usually by enormous swelling from effusion into the joint. It is quite painless, even upon active movement, due to insensibility of the structures with wearing away of the articular ends of the bones. I would ask you is there anything analogous to this in the alveolar processes of the jaws, as well as the tooth fangs and dental pulp?

Fifthly, *Absence of tendon reflexes.* The pupillary changes to which I have referred may be accompanied with other phenomena, known as absence of tendon reflexes, the most common of which, and the only one to which I care to draw your attention, is absence of the "knee reflex." This is elicited by striking the patella tendon below the knee with the tips of the fingers when the leg is semiflexed, or when the legs are hanging over the edge of a table, or when one leg is crossed over the other. In health, when this tendon is tapped the leg is thrown forwards and upwards, but when sclerosis of the sensory channels of the spinal cord exists the leg is absolutely immovable. I must not weary you farther with these signs of locomotor ataxy ; the practical outcome, however, seems to me to be of importance in regard to the wholesale extraction of teeth, which to my mind is often an opprobrium to dental surgery.

Then I would say, when *in doubt* as to the value of wholesale extraction, examine the pupil of the eye, the absence or presence of the knee reflex, and the balancing power of the patient when standing erect with the eyes closed ; if the signs are present indicating sclerosis of sensory nerve-fibres, or if there be marked hysteria, I should say unlimited extraction of the teeth would scarcely be justifiable ; if, on the other hand, these signs are absent, showing that peripheral irritation is the cause of pain, then, and then only, should I consider any amount of operative interference likely to lead to good and beneficial results.

I cannot as a practical man conclude a paper of this kind without stating something concerning the treatment of neuralgias of the fifth nerve. I quite indorse the opinion of Professor Horsley with regard to "nerve-stretching." He says, in the valuable paper which he read before this Society : "I think that experience has now made it clear that nerve-stretching should not be performed on the branches of the fifth nerve, although the results following its application to other nerves are satisfactory." But, he continues, avulsion on the other hand is much more successful—in fact it generally cures. Well, gentlemen, it is possible—nay, even probable—that Professor Horsley is right. All I can say is, I am somewhat sceptical. Medical literature is full of successful cases of inveterate neuralgias of the fifth nerve cured by section and resection ; the cures are, however, upon close examination found to be only of a temporary character. The best advice which I can give you is to be found in the thoughtful and experienced remarks of your past learned President, Mr. Charles Tomes, in the discussion of Mr. Horsley's paper : "Relief from severe and persistent pain quite justifies any ordinary surgical procedure, but I cannot quite see how relief means cure. How often do we see this word written to a case when the word 'relief' would be far more appropriate."

At the time when M. Trousseau and M. Nélaton (the giants in medicine and surgery of their day), of Paris, were at the height of their fame and celebrity, pathology and physiology had not then made the advances which they have since secured ; if they had, I sincerely believe we should now be in possession of a more rational experience concerning the intrinsic pathology of the fifth nerve. What we want is a clear and definite mode of diagnosis, so as to lead us to adopt precise operative measures. I still feel that the opinion of so distinguished a physician as M. Trousseau should be held in the highest esteem. He said, when lecturing on "Epileptiform Neuralgia": "Is it to be said, gentlemen, that we can never give relief in such a degree that it may be almost equivalent to a cure? I confess openly that I have never cured a single patient, none at least of those whom I could see during several years; but I have made the life of some bearable, as you have yourselves seen in the case of the individual who is still in my ward, and whose history I related to you." In speaking of the administration of drugs, M. Trousseau says: "Of all the therapeutic agents which I have used—and I have used a good many with extreme perseverance—opium then, is the drug which has least disappointed me."

Since the time of M. Trousseau many drugs have been discovered which arrest pain, notably croton chloral, and cocaine, and gelseminum.

In the treatment of neuralgias, as far as drugs are concerned, I must say that I have immense faith in the value of opium when it agrees. I have certainly cured many cases of simple peripheral tic by grain doses every hour of the watery extract of opium, and a free and liberal diet, a twenty per cent. solution of cocaine being applied to the part when in pain. If croton chloral be given, it must be in doses of fifteen or twenty grains, but croton chloral will never cure tic. I broadly treat facial neuralgias by drugs as follows. When of the supra-orbital nerve, I give quinine in twenty or even thirty grain doses, just before the time for the paroxysm to make its appearance, and every other night a pill of calomel and gamboge, a plain non-alcoholic diet, with plenty of milk. When of the middle and inferior maxillary nerves, I give iodide and bromide of potassium, with half-drachm doses of the tincture of gelseminum three times a day. M. Goubler stated at the Société de Thérapeutique, Jan. 25, 1887, that he did not know a neuralgia of the fifth pair, even a tic-douloureux, which had resisted aconitine, and in support of this statement M. Goubler reported many curious facts. He gave amongst others the history of a patient who came to him screaming. He had suffered day and night for three months. With aconite the pain completely disappeared; tired of taking it the patient ceased the remedy, the neuralgia reappeared, and yielded anew to the aconite. M. Goubler says he saw some years ago a patient afflicted for a long time with an obstinate facial neuralgia, for which Nélaton had performed resection of all the nervous filaments, which had only given him temporary relief. This man talked of killing himself. When, under the advice of Debrut, he was given aconitine of Hottot, the pain was absolutely suppressed. Goubler gave the solution of the nitrate of aconitine half a milligramme ($\frac{1}{140}$ grain), which is equivalent to a quarter of a milligramme ($\frac{1}{280}$grain) of aconitine; the dose he says may be pushed much farther. In the patient on whom Nélaton had operated, five milligrammes ($\frac{1}{13}$ grain) of aconitine of Hottot was given; with three milligrammes the pain returned, but with five milligrammes the patient suffered no more. What this "no more" means, gentlemen, I really cannot tell you, but I should not give the $\frac{1}{13}$ of a grain of aconitine myself, neither should I recommend others to do so. Whilst speaking of drugs, in neuralgia of the fifth nerve, and in the fulgurant pains of ataxy, I have been much pleased with the good effect of antipyrin in one-scruple doses every half-hour, or every quarter of an hour, until the pain is relieved.

Marino, in the *Gazetta Clinica di Palermo* for June, 1876, speaks highly of the injection of ergotine. He says: "In sunstroke and tic-douloureux facial hypodermic injections of ergotine have rapid and certain effects superior to those obtained by all other remedies, including quinine." Dr. Marino says the injections of ergotine are equally useful in hemicrania and sciatica.

I have for some time injected an ethereal solution of ergotine with markedly good results in trigeminal neuralgia and sciatica, with equally beneficial effects, and I can therefore recommend it. I usually inject one grain of ergotine dissolved in five minims of ether; in facial neuralgia I inject it into the scalp immediately behind the ear, and in sciatica I push the needle of the syringe well into the sciatic nerve. The injection is usually followed by more or less intense burning, but it has a marked action in suppressing the pain. I use a solution of osmic acid (1 per cent.) in the same way, and with pretty well the same effect.

I have very little faith in any single remedy for the cure of pain, still we cannot cast drugs aside altogether; every man of experience and practice knows quite well that occasionally he is marvellously successful in the remedies which he employs. I hope it will not astonish you when I tell you that I have cured very severe pain by the injection into the skin of half a dram of cold water, but the patient believing it was a very large dose of morphia, and went calmly to sleep.

I have before me, whilst writing, a little pamphlet entitled "The Treatment of Inveterate Neuralgia of the Fifth Nerve," by J. Montaign Didsbury, of Paris, translated by Mr. Wallis. His treatment consists in dividing and cauterizing with the actual cautery the auriculo-temporal nerve. M. Didsbury says "It is the shock to the grey axis of the medulla produced by cauterization that effects the cure, the application is made to the helix of the ear." I think there is much to be said in favour of M. Didsbury's treatment.

In the *Centralblatt f. Nervenheil* (No. 11, 1880), Dr. Seeligmüller, of Halle, reports a dozen cases of intermittent supra-orbital neuralgia treated successfully in every instance by means of the nasal douche. Usually less than three days sufficed for the complete cure; the fluid employed was the ordinary solution of salt or warm milk. It was used in the evening and again an hour before the expected attack. Wherever the nostrils were found occluded a sufficient pressure was used to force the fluid through. The author attributes the relief to the mechanical emptying of the frontal sinuses of the retained secretions. He believes the pain in these cases to be due to catarrh of the frontal sinus.

I have lastly to say a few words to you concerning the application of galvanism and massage in the treatment of all forms of neuralgia of the fifth nerve. I prefer the Voltaic or galvanic current (Static) to faradization; sometimes—in fact, most frequently—I employ a combination of the two currents, the voltaic current being always in excess of the faradaic. I never use strong currents: two, three, or four milliampéres of the continuous current being quite sufficient with a minimum dose of faradaic, and my mode of applying it is as follows:—If I have to treat a neuralgia of the first division of the fifth nerve, I plug the nostril with very soft sponge or cotton wool, and into this I insert a fine wire electrode (positive pole), whilst I fix my negative electrode in the form of a long plate to the cervico-dorsal region of the spinal cord, and then complete the circuit. I allow the current to pass for ten, twenty, or even thirty minutes at one sitting; this should be continued daily for a week even after the pain has been removed. I have on several occasions cured severe supra-orbital and orbital pain by this means, at one sitting. Sometimes, instead of placing the pad electrode at the back of the neck, I place a large piece of porous sponge into the mouth so as to fill up the maxillary cavity, into which I pass the negative wire electrode, and the results have been most satisfactory even in tic-douloureux of an inveterate character. The application of the galvanic current, requires a little practice and discrimination, but I strongly call your attention to this method of procedure. Be careful not to apply either current too strong. Faradization alone is worse than useless ; it only tends to exhaust still further an enfeebled nerve, and subsequent attacks of pain will be more violent than before.

I do not think static electricity has been tried as thoroughly as it might be. I certainly have found it useful. The patient being insulated and charged with the positive current, the discharge is effected by a fine conductor over the site of exit of the facial branches of the nerve particularly, but rapid discharges should be carried on from the tip of the nose, the ears, the neck, and the back. In the treatment of all neuralgias, massage and diet are of importance. Local neuralgias are not of necessity always associated with general nervous enervation, but they are unquestionably so in a very large majority of cases ; cold feet, cold hands, weak circulation, weariness and fatigue are the usual accompaniments ; strong physical vigour and neuralgias rarely accompany each other, so that in all cases where ordinary remedies fail to give relief I should recommend rest, massage, and blood-making easily digested foods. I am afraid, gentlemen, that I have wearied you, but I have had to deal with the rudiments of the widest and most interesting subjects in the whole range of physiological and clinical study, and I feel that, however imperfectly I have performed my task, I can at least trust to your generosity to pardon my shortcomings.

DISCUSSION UPON DR. STRETCH DOWSE'S PAPER.

THE Chairman said in opening the discussion that the paper with which Dr. Stretch Dowse had favoured the Society was one of the greatest interest to dentists. There was a danger lest dentists should think too much within the limits of their own particular line, and therefore it was of the greatest value that papers such as they had heard to-night should be read before them so as to open their eyes to wider views. He had no doubt that many points which had been raised would lead to a full discussion.

Mr. Storer Bennett said he was very much interested to note, amongst other things, that Dr. Dowse had adopted one mode of treatment for neuralgia affecting the first division of the fifth nerve, and a different one when the second and third divisions were involved. As far as he could trust his memory, large doses of quinine were advised in the former case, while the bromide and iodide of potassium were commended in the latter. There had been clearly a train of thought underlying these variations in treatment, and it would be extremely interesting to know what that line of thought was.

Dr. Mitchell said it was very interesting and important to notice in connection with affections of this nerve that reflex action was produced as a result of irritation of the fifth pair of nerves, not only upon the lower but also upon the upper extremities. A case in point had come under his notice. It was of a young man badly affected by continuous neuralgic pains, that is to say, pain lasting for several hours, and then intermitting for a short time, to recur as severely as before. This went on for two or three weeks. All treatment was unavailing; he had been treated by a physician upon general principles, as the affection was supposed to be of malarial origin. The pain appeared to originate in the vicinity of the ear, and thence travelled down the neck to the right arm. It obliged him to give up his work, and interfered with his rest. He consulted Dr. Mitchell with the view of ascertaining whether the trouble might not be of dental origin. Examination of the mouth failed to reveal evidence of dental caries, but there was an unerupted lower wisdom tooth to which the mischief might be attributed. Dr. Mitchell tried local applications, which gave no relief, and eventually decided to cut down upon and remove the unerupted tooth. The result was that not only did relief of the pain at once appear, but a complete cure was affected, showing that the neuralgia was entirely due to peripheral irritation. Again, another case in which peripheral irritation produced the locomotor ataxia spoken of, had occurred in Dr. Mitchell's practice. The case was extremely severe, lightning-like pains being produced by the most trivial causes. This condition was due to the state of the dental organs; many of the teeth were beyond treatment by filling, and so were removed. After a time the patient got quite well, but it took from four to six weeks, as though the irritation had left an impress upon the nervous system, which took some time to wear off. Dr. Mitchell said that this was the most remarkable case of fulgurating pains which he had seen recorded, for in examining his patient he happened to touch the skin over the infra-orbital nerve with a cold mouth mirror, and this at once started pain, showing that the neuralgia was produced by peripheral excitation.

Mr. Thomas Gaddes said that he thought that the able paper which they had had the benefit of listening to would do considerable service to their profession of dental surgery. The relation which Dr. Dowse had pointed out as existing between sclerosis and the neuralgias affecting the branches of the fifth nerve had a direct application in daily practice; for, as he had shown, the removal of teeth with a view to relieving pain would not be the right treatment to pursue. Mr. Gaddes thought the more they were able to recognise those conditions of sclerosis which are associated with forms of neuralgia, the better would they perform their functions as dental surgeons. From that aspect of the question he felt that they were deeply indebted to Dr. Dowse for his valuable paper.

Mr. Newland Pedley said he would like to narrate a case which emphasized that the wholesale extraction of teeth was not a useful practice in cases of trigeminal neuralgia. The patient was admitted into Guy's Hospital under the care of the late Dr. Walter Moxon, shortly before whose death the occurrence took place. The lad complaining of severe neuralgia, Mr. Pedley was asked to examine his teeth; he accordingly went to the patient, who insisted that his pains were due to his teeth, and prevailed upon Mr. Pedley, in a weak moment, to extract a tooth. Upon examination, the tooth was found to be but slightly diseased, and Mr. Pedley felt vexed that he had been prevailed upon to remove it. The pains persisted, and Dr. Moxon again asked Mr. Pedley to remove other teeth; but this he refused to do, explaining his reasons to the physician. The boy, however, was determined to carry his point, and so removed his own teeth, employing a pair of scissors for that purpose. The teeth bore the marks of the scissors, showing that considerable force had been employed. Mr. Pedley reported the matter to Dr. Moxon, lest that gentleman should have imagined that he, (Mr. Pedley), had been a party to the extractions. Subsequently

Dr. Moxon wrote to Mr. Pedley, exonerating him from responsibility in the matter, and informing him that the boy had developed unmistakable signs of cerebral abscess, and hence, no doubt, the neuralgic pains.

There was one other case he might be allowed to instance in support of the contention that nerve-stretching will in some cases cure neuralgia. About twelve months previously to last Christmas, a lady had come to Mr. Pedley, suffering from neuralgia of the lingual gustatory nerve. The nerve was stretched by Mr. Clement Lucas, and the patient had remained free from pain since the operation. Of course it could not be as yet stated whether this would turn out to be a permanent cure.

Mr. Hern said Dr. Dowse had remarked upon the importance of examining the eyes of patients before undertaking any important dental operation. That point had been impressed upon Mr. Hern a short time since. A man came to the Middlesex Hospital with anæsthesia of the right side of the face supplied by the fifth nerve. This fact Mr. Hern had observed, but upon that occasion he failed to perceive any inequality of the pupils. The tooth complained of was very much worn down, and Mr. Hern removed it, as he thought the pain complained of might be due to a calcification of the pulp. A subsequent examination, however, revealed nothing specific about the tooth. The man came again, having experienced no relief from his pains, and wished to have the next tooth extracted; to this Mr. Hern demurred, and it was upon this occasion that he observed the inequality of the pupils. Mr. Storer Bennett saw the case with him, and it was decided to pass on the patient to Mr. Lang, the ophthalmic surgeon, who, he believed, had transferred him to Dr. Ferrier. This was the first part of the history of Dr. Ferrier's published case, and to which Dr. Dowse had that evening referred.

Mr. J. Smith Turner said that they could scarcely approach such a paper as the one they had that evening heard in a controversial spirit, so that he thought the best return and the kindest return they could make to Dr. Dowse for his most valuable and interesting paper was to tell him anything which they knew that might prove of interest to him. In thinking over the cases of nervous diseases with which he had been brought in contact he could recall several of locomotor ataxia, but in none of these had he met with any dental mischief. He could, however, recall one case which might prove interesting. It was some disturbance set up by a lower wisdom tooth, and this he extracted ; he believed there had been a previous attempt, although an unsuccessful one, to remove it. The gentleman had been brought up from the country to consult Mr. Smith Turner. He had got into a frame of mind which one might call hysterical, and Mr. Smith Turner was at the time disposed to be angry with him, as he thought he exaggerated the severity of his sufferings. The patient upon entering the room made two or three steps towards the chair, when he suddenly collapsed, and unless his father and brother, who accompanied him, had made a rush he would evidently have fallen. These symptoms Mr. Turner was assured had been developed by his disease. At the time he regarded them as being purely emotional, but from what they had heard that night he was inclined to come to a different conclusion. He might mention that the symptoms entirely vanished upon the removal of the tooth.

Mr. Paterson said he should like to bring before the Society a case of spasm of the muscles connected with the lower jaw. The patient, a railway guard, had met with an accident, and ten months subsequently spasm began to show itself. The interest of the case centred in the fact that the man had been elevating his own tooth with a bone spatula which he carried, until he had levered out all the front teeth in the upper jaw. The spasm was in nowise benefitted by this treatment, but the bite was so altered that he was actually in the process of biting into the ligament of the upper lip. All along the upper lip was ulcerated, and this condition intensified the spasm. Mr. Paterson had considerable difficulty in obtaining a model, and only succeeded in doing so by the aid of chloroform. He then constructed a small plate, which covered the lip, and restored the jaw to its proper balance. This took the bite off the ulcer, and resulted in amelioration of the spasms. When the patient was last seen, although they were very much lessened in severity, they still existed. Gelseminum had been administered to this patient under the direction of Dr. Lauder Brunton, but the bromide of potassium appeared to give him more relief. There was one other point with regard to the tendon reflex. Would Dr. Dowse inform them whether the absence of patella tendon reflex was absolutely pathognomonic of nervous disorder? He asked this because he had observed its absence in several persons who were presumably healthy.

Dr. Stretch Dowse, in replying, said he was extremely obliged for the patient way in which his paper had been listened to, and he was grateful for the information which had been accorded to him. Two gentlemen, he believed, had asked questions. In reply to Mr. Storer Bennett, he would say that he believed quinine was valuable in supra-orbital neuralgia, because that affection was frequently malarial in nature. With regard to use of the iodide and bromide of potassium, that was rather a long story. Gelseminum, he believed, acted as a specific in certain cases, but he could not go further than that. In reply to Mr. Paterson, he would say that the patella tendon reflex was absent in health in a certain number of cases, and statistics collected from the German army showed that in about one per cent. of cases in healthy individuals it was absent.

BACTERIA AND PUS FORMATION.

A. Zuckermann (*Centralbl. f. Bacteriologie u. Parasitenkunde*, No. 17,) relates his experiments upon suppuration, which have led him to these conclusions: That no chemical, mechanical, or thermic influences can excite suppuration in tissues wholly free from microbes; and in cases where these causes apparently act, it is probably through some pyogenic microbe. Substances chemically pure may be mycotically impure; thus some disinfectants are not always free from microbes. The varieties of microbe known to cause suppuration are *Staphylococcus Pyogenes Aureus*, *Albus*, and *Citreus*; *Streptococcus Pyogenes*; and in fœtid abscesses, *Bacillus Pyogenes Fœtidus*. Inoculations with Staphylococcus and Streptococcus produce fatal results if injected in large amount into animals, or lead to suppuration if death do not occur. The pyogenic microbes must have a very general distribution in nature; they may enter the body through the air-passages, the intestinal canal, and especially the skin, and by means of small wounds, or the orifices of the cutaneous glands. Staphylococcus is more frequent than the Streptococcus pyogenes.

British Journal of Dental Science.

LONDON, JUNE 1st, 1888.

"WHAT HAS THE MEDICAL PROFESSION DONE FOR US?"

THE consideration of this question forms "Scio's" main contention in favour of dental autonomy. That the phrase forms what logicians call a "begging of the question" does not appear to discomfort "Scio." If we are a part of the medical profession, governed by its laws, and guided by its traditions, the question asked is simply answered; but if we are not of the medical profession, as the phrase would seem to imply, why, then the whole matter is settled, and we, being neither kith nor kin of the M.R.C.S's nor of those degraded creatures whom Mr. Bullin scathingly apostrophises as "only M.D.'s" must perforce go for autonomy. But let us hear what "Scio" has to say. "Was there ever a more unfortunate title for a degree (*sic*)" *i.e.* than the L.D.S. And it is so, because the L.D.S. implies, he thinks, that we confine ourselves to the surgical side of dentistry, while quacks (very wisely) class themselves with the mechanical side. The public, he believes, identify the L.D.S.'s with the "doctors," and ask, what do doctors know about making artificial teeth? Further, the doctors refuse to recognise L.D.S.'s as fellow practitioners, dislike their connexion with their College (of Surgeons), and show their dislike by sending patients to the quacks! It is difficult to understand how "Scio" can have fallen into so many blunders in so small a space. In the first place, the L.D.S. does not narrow down to any one branch of dental science. As is shown by the regulations imposed, no man can be admitted for examination unless he has acquired mechanical proficiency, and the examination as at present conducted, insists upon adequate knowledge of all branches of dentistry. No distinction is in this country made between dental medicine, dental surgery, or dental mechanics, but a man having qualified as a dentist is, by the act of the Medical Council in admitting him to the Register, declared as qualified to practice all branches of his art. But "Scio" might urge, none of this applies to the public, who are not in the habit of scanning the regulations of examining boards and therefore might accept the L.D.S. as a specialist in the surgical side of dentistry. In answer, we must say that our experience of the public goes wholly against such a theory. If they ever learn to look for the L.D.S. which in nine cases out of every ten they will not do, they would accept it as meaning "dentist," and would expect him to undertake everything which they thought was within the domain of the dentist. The absurdity of "Scio's" quibble is exposed by instituting a comparison between the L.D.S. and the L.S.A. The licentiate of the Society of Apothecaries is a person who is examined in medicine, surgery, midwifery and pharmacology, he is nevertheless an apothecary, and presumably more conversant with boluses and elixirs, than, say the sphygmograms of heart disease or the physical signs of intra-thoracic hæmorrhage after broken ribs. "Scio's" contention that medical men look down upon dentists, and are exasperated that by their association with the College of Surgeons, the dentists can claim to be under the œgis of the same corporate examining body, is at best a wild exaggeration if there be any truth in it. Medical men know very little indeed about the education of dentists, and as a rule do not appreciate that English dentists obtain their licence to practice from the College of Surgeons, while the fact that the licentiates in dental surgery are altogether outside the pale of the body politic of the College, and take an absolutely different position towards their College from that held by the fellows and members, effectually disposes of "Scio's" other statement.

But, says "Scio," this is not all. The unholy alliance between dentistry and surgery is leading us into farther and deeper abysms of evil. There is, we are told, a strong pressure put upon our dental students who are induced to take the M.R.C.S. as well as the L.D.S., and they, by so doing, appease that irascible body of men "the medical profession." These "surgeons," who practise dentistry are helped by their brethren, the M.R.C.S.'s, who practise surgery, and so the L.D.S.'s are left out in the cold and have to contest with the quacks for the bone of public approval. "It is a miserable business," says poor "Scio," "from beginning to end"; and if his arguments were not fallacious, it would be a miserable business. If "Scio's" contention were right, that any "surgeon dentist," by which we presume he means an M.R.C.S., L.D.S. "were to commence practice in any town," the L.D.S.'s would straightway find "their occupation gone," it might be worth while enquiring whether or not the fault lies rather with the L.D.S.'s themselves, than with the College of Surgeons and the doctors. The unsympathetic outsider would be a little inclined to tell "Scio," that the principle enunciated in the phrase "the survival of the fittest," applies in the dentist's world as in the animal kingdom, and by its inexorable law, the L.D.S. and the M.R.C.S., L.D.S. must decide which is the fittest, for he will survive. "Scio" says the M.R.C.S., L.D.S. ousts the L.D.S., if so, he will survive, and the best thing "Scio" can do, is to see that his sons all take the surgical as well as the dental diploma, and so obviate the terrible risks which "Scio" pictures. It is curious to find how much the would-be iconoclasts of the dental world differ in their estimate of the value of the M.R.C.S., while Mr. Bullin vamps up his complacent eulogies of the "L.D.S. only," and descants from the pinnacle of his eminence upon the ignorance and inability of the M.R.C.S., L.D.S., and the "unregistered M.D.'s," "Scio" deplores, that the poor L.D.S.'s will, in the advent of the M.R.C.S., L.D.S., betake themselves to the streets, and, like painters out of work, rend the welkin with their plaintive cry, "We've got no work to do"! On the side of the progressive party we find an eminent leader of thought, telling his students to be dentists first, and surgeons after ; but we venture to contend that the truer motto, which should be pinned to the mast is, Be surgeons that you may be better dentists. But "Scio" asks, is this rottenness in the state of our dental Denmark irreparable ? He hopes not, and so do we ; but we must postpone the consideration of his scheme for the regeneration of the L.D.S.'s and the dental profession.

DR. PARMLY BROWN.—We understand that this gentleman who is well known both here and in America, has been invited to pay a visit to Europe. He comes to England in June, and will hold demonstrations and clinics on his system of porcelain crown work and all-porcelain bridge work. Dr. Parmly Brown will also demonstrate upon gold crown work, contour gold fillings with the use of the electric mallet, the depressed rubber dam, and other interesting novelties. The Knapp blow-pipe, and a small furnace for baking porcelain bridge work will be shown in operation.

EPITHELIOMA OF THE GUMS.—Mr. Frank Lankester reports a case of this somewhat rare affection. The patient, aged 55, applied at the National Dental Hospital for relief on account of having a rather sore gum. The left upper canine root loosened and came out five months previously, the socket enlarging and becoming ulcerated. There was tenderness and pain. A dentist to whom he applied, added vulcanite to the plate he wore, making an artificial gum and covering up the ulcer. Mr. Lankester recognised the condition, and transferred the patient to St. Thomas's Hospital, where an operation was performed, a portion of the maxilla being removed. The growth was found to extend to the right of the *septum nasi.* The patient died subsequently from pyæmia. The case, as Mr. Lankester points out, gives proof, if any be needed, of how all-important it is for a dentist to know something of surgery. If the first dentist to whom the patient referred had diagnosed the disease, and had sent the sufferer to a surgeon, much valuable time would have been saved, and, perhaps, a different issue to the case have been brought about.

ACTION FOR INFRINGEMENT OF COPYRIGHT BY A DENTIST.—Dr. George Cunningham, of Cambridge, has sued a Chemist and Druggist under the "Book Act," Vict. v. and vi. c. 45. The plaintiff wrote a work called "A Suggested System of Dental Notation" which contained diagrams explanatory of his method of recording the condition of the teeth, operations, etc., and Mr. Whittles, the defendant, had, it was alleged, published the material part of this work under the title of "Whittles Dental Register." Mr. Justice Kekewich granted a perpetual injunction against Whittles, and the recall of all copies of "Whittles Dental Register." We fear even so complete a victory will hardly compensate Dr. Cunningham for the trouble and annoyance the action has caused him.

THE NATIONAL DENTAL HOSPITAL has, we believe, acquired a corner site in the immediate vicinity to the present building, upon which the authorities will, they hope, be able to erect a more suitable hospital than the present. The increasing work and number of patients render this step necessary, if the present high standard of work and efficiency in treatment is to be maintained. We understand that funds to carry out building operations are needed, and will be gratefully received by the secretary.

POST-GRADUATE COURSE AT THE NATIONAL DENTAL HOSPITAL, GREAT PORTLAND STREET.—On June 1st will commence, this, the second dental post-graduate course held this year in London. The first course undertaken at the London School of Dental Surgery, has, on all hands, been most cordially received and warmly supported, and the program set forth by the National Dental Hospital gives us every assurance that it also will prove a great boon to the busy practitioner anxious to maintain himself abreast of the science of the day. The present course differs from the other in so far that the National Dental Hospital Medical Committee have deemed it advisable to invite non-members of the staff, to assist in carrying out the programme. The presence of Mr. Walter Coffin and Mr. Bonnell will doubtless enhance the variety of the teaching, and infuse fresh spirit into the enterprise. The times and arrangements seem well suited to the convenience of intending post-graduate students.

St. Mary's Hospital.—The authorities of this hospital are appealing for funds to enable them to extend their premises and acquire a better frontage than that which at present it possesses. The school in connexion with St. Mary's Hospital has, within the past few years, shown a considerable degree of energy, and has done such useful work as to deserve every support from the benevolent public.

Royal College of Surgeons of England.—The next examination for the Licentiateship of Dental Surgery of the Royal College of Surgeons of England, will be held on Monday, Tuesday, and Wednesday, the 11th, 12th and 13th of June.

The First Dental Appointment in Canada.—McGill University, Faculty of Medicine, now in its 56th Session, Montreal, Canada, has recently made a new departure in its teaching, the first of the kind ventured upon in our great American dominion. Mr. W. George Beers, of Montreal, founder and editor of the *Canada Journal of Dental Science*, the only Canadian Dental Journal, has been asked by the Faculty to accept the appointment of Lecturer on "Dentistry applied to Medical and Surgical Practice," and having accepted, is delivering a didactic and clinical course specially for the graduating class.

Death from swallowing Artificial Teeth.—Inquest.—Yesterday, Mr. Carter, coroner, held an inquest at the Queen Victoria publichouse, Southwark-park-road, Bermondsey, on the body of Richsrd Glanville, aged 85, lately residing at 16, Trothy-road. Brougham Glanville, deceased's son, stated that on Sunday morning when he awoke he found his father lying dead by his side. His father wore false teeth. Dr. J. F. Rugg found the old man lying dead in bed. He discovered a plate of false teeth tightly wedged in his throat just above the windpipe.

Abstracts of British & Foreign Journals.

ITEMS OF INTEREST.

DISCOLOURATION OF DENTINE.

The following question and answers are found in Vol. II., 1861, of the *Cosmos*. What further light have we now?—Ed. Items.

A front tooth. which, years ago, was filled with gold; its nerve having previously died. Is dark coloured and has been so nearly ever since it was filled. It is now stained throughout the entire dentine. What is best course to restore it to its natural colour?

ANSWER BY C. WOODNUTT, D.D.S.

Clean the cavity well with excavators, removing as little of the dentine as possible, because a dead tooth is brittle. After this saturate a pledget of cotton with liquid chloride of soda (Labarraque's solution) and place it in the cavity, pressing it in contact with all parts. To this most rapidly seal the cavity up with wax, to prevent the dilution of the chloride. Remove the application every day until the tooth is bleached. This will sometimes take two weeks. This treatment if "*persevered in*," will destroy the tooth, says the Editor of *Cosmos*. If it be used at all, it must be for a very limited time, and not very strong.

ANSWER BY W. H. ATKINSON, D.D.S.

Open into nerve canal through lingual depression, and clean out all retained matters to the apex of root. If the tooth is not tender, proceed to enlarge the canal with watchmaker's brooch set in a handle till cylindrical to the point; excavate all that you may and retain strong walls to the cavity of crown, opening every tubule to facilitate introduction of bleacher. Then take accurate measure of the depth of canal and pass in a truncated bur or rose-head drill, or brooch, a size or two larger than the one previously made, to within $\frac{1}{4}$ or $\frac{1}{16}$ inch of the apex, thus leaving a shoulder against which to pack. Then pass a pledget of cotton wet with pure creasote, into a part of the canal between this shoulder and the point (if the cotton should project a very little beyond the apex no matter), and proceed to fill imperviously half the remaining part of root-canal with gold, thus securing against the possibility of escape of the bleaching solutions which are so troublesome where freely used, as they must be to obtain the best results. Now pass solid chloride of zinc into the canal and pulp chamber, taking care to mash it into fine bits of powder *in situ*, to secure promptness of bleaching effect; close tightly with paper, cotton, or wax, for fifteen or thirty minutes, after which wash out thoroughly with syringe charged with *warm pure* water. Repeat process until the the colour is restored, and then fill nicely. If possible repeat every half hour or hour until complete.

ANSWER BY C. A. KINGSBURY, M. D.

Cites a case to show his method of procedure.

Miss P., æt. 25, called attention to two of her front teeth, the superior central and the lateral incisors of the left side. They were very much discoloured. They were both filled with gold on their proximal surfaces. There were clear indications that, at the time of their being filled, the decay had nearly or quite reached the pulps. The usual arsenical paste had been applied to destroy the pulps or obtund this sensibility. The teeth were then filled. Soon after they assumed a reddish-brown, which changed to a slate colour. The pulps, losing their vitality while in a congested state, containing an amount of blood sufficient, when once decomposed and permeating the dentinal tubuli, to cause the discolouration of the crowns of the teeth. The fillings, were removed and after excavating free openings into the pulp cavities, they were syringed thoroughly with tepid water. The pulp cavities, as in almost all such cases, were filled with a dark-coloured and extremely offensive fluid. A suitably sized brooch was introduced having the point armed with a small pledget of cotton saturated with the tincture of iodine. This acts as a most efficient deodorizer; and while its application, repeated two or three times within as many minutes, entirely removes the fœtid odour, it also acts as a powerful stimulant and local alterative, correcting any mordid condition existing in the periosteum and surrounding tissues. The next application was a solution of cyanide of potassium. This not only removes the stain of the iodine, but it acts as a solvent of hæmatine, the colouring material of the blood globules. It also dissolves any remains of albuminous matter contained in that portion of the dentine that has lost its vitality.

Sp. ammoniæ is also useful for cleansing and bleaching discoloured teeth. It is less useful than the solution of cyanide of potassium, for this not only acts as a solvent of hematine, but of almost all forms of colouring matter present in discoloured teeth ; not even excepting nitrate of silver or the metallic oxides. When the desired change in the colour of the tooth with its application, is unobtainable, fill the cavity with moistened plaster of Paris, and let it remain from 2 to 5 days. The ordinary calcined plaster of Paris was used in this case with good effect. Finally cleanse and fill the nerve cavities and crowns with gold. After the use of creasote apply dry cotton or a pellet of spunk, or bibulous paper, to absorb any excess of creasote. In using the cyanide of potassium, avoid its coming in contact with the gum, especially any abraded or wounded part of it. To prevent it from being forced through the foramina at the apex of the fangs, it is necessary to fill the nerve cavity permanently with gold, or temporarily with cotton saturated with gum sandarach dissolved in alcohol, or some similar preparation, previous to applying the cyanide. It is one of the most serious consequences to the patient. The solution may be made by adding ten grains of the cyanide to a half fluid dram of pure water; or, to make it more simple—in the absence of a proper measure—to a piece of the cyanide of the size of an ordinary buckshot add half a teaspoonful of water. As it soon decomposes, and in a great measure loses its bleaching properties, prepare it at the time required and throw away what remains after using in each case. It should be applied on a small pledget of cotton, not more than one or two drops at a time. In no case should it be left in the tooth and the patient permitted to leave. After repeated applications, allowing the cotton to remain in the cavity five or ten minutes, warm water should be injected with considerable force from a syringe. While acids and chloride of soda weaken and destroy the texture of the tooth, this solution possesses superior bleaching power, producing its effect in most cases immediately, without injury to the dentine.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, held April 9th, 1888.

MR. J. HOWARD MUMMERY, M.R.C.S., L.D.S., *Vice-President*, in the Chair.

THE Minutes of the last meeting were read and confirmed.

The Chairman read a letter from the President in which he stated that he regretted his inability to be present at the meeting.

Messrs. Alfred Stevens and James Rymer signed the Obligation Book, and were formally admitted to membership by the Chairman.

The Librarian (Mr. Felix Weiss) announced that the Society had received for its Library various pamphlets by Dr. Miller and Professor Busch, of Berlin; also three volumes of the "American System of Dentistry," together with the Transactions of the Odontological Society of New York.

The Curator (Mr. Storer Bennett) announced that, through the kindness of Mrs. Merryweather, the Society had received a number of very interesting specimens collected by her late husband during the course of his practice. Two of the specimens were placed upon the table for inspection. The first consisted of all the teeth from the upper jaw, bound together by very soft gold wire being wound round their necks and the lower portion of their roots, the case being described in Mr. Merryweather's note-book in the following terms:—"This gentleman (from India) lost one tooth after another, and, as they dropped out, they were fastened to the remaining ones; these operations were performed in Ceylon, and all the teeth became eventually dependent upon the last molar, which was in consequence loosened, so much so that it had to be removed, and with it of course the whole structure. A very novel effect was produced in the mouth by the constant movement of the whole apparatus, either in speaking or on any other action of the muscles of the face."

The second specimen from this collection was also extremely valuable, since it was an example of a very rare aberration of development, where the pulp for the formation of the temporary teeth, instead of becoming segmented off into three distinct portions for the central, lateral, and canine, merely presented two grooves running parallel to the long axis of the mass ; thus what should have been three teeth was merely one tooth resembling three, imperfectly fused together. It was, in fact, a case of three geminated right upper temporary teeth. There were plenty of specimens of two such geminated teeth, but there was only one other in the Museum where three were thus united.

From Mr. Lord (of Blackburn) the Society had received two other specimens of geminated teeth ; the first one is described as having "occupied the position of the upper right central in a well-developed jaw of an aged gentleman, a canine tooth being the only one remaining. It was loose from absorption, and was extracted March 26th, 1888, and was first filled forty years ago."

The second specimen was the united crowns of a lower right temporal central and lateral incisor.

The preceding four specimens were all examples of true gemination—*i.e.*, where the teeth have been developed from a common pulp and are not merely united by cementum.

On behalf of Captain H. R. Lloyd, at present in India with his regiment, Mr. Storer Bennett presented to the Museum a very fine skull of a tigress, the dentition of which was perfect with the single exception of the right upper canine, which had been fractured near the point, but the edges of the fracture were rounded off, showing that the injury took place some considerable time before the animal met her death. The dentine was but little affected, so that the pulp had not become involved, and none of the disastrous results had accrued, such as alveolar abscess, &c., which has lately become so familiar, as the results of injury to the teeth of the lower animals.

The Council had decided on the purchase of six skulls. viz :—

1. A Spectacled Bear (*Ursus ornatus*), in which there had been in parts considerable inflammation and absorption of the alveolus, similar to what one would expect to find in a bad case of the (so-called) "Riggs' disease."

2. A young Polar Bear (*Ursus maritimus*), which had four alveolar abscesses arising from the pulps of the four canine teeth. It was intended further to describe the specimen on a future occasion.

3. A Patas Monkey (*Cercopithecus patas*), showing the transition from the deciduous to the permanent dentition.

4. A New-world monkey, in which the dentition was perfect. The members would of course remember that these monkeys possessed three bicuspids (premolars) instead of only two, as all the monkeys of the old world had; and that the pattern on the grinding surface of the crowns of the true molars was much simpler in the former creatures than in the latter.

5 and 6. Two skulls of young Striped Hyænas (*Hyæna striata*), a male and female, showing the transition from the milk dentition to the permanent one.

Mr. Felix Weiss remarked that the specimen shown by the Curator, of several teeth held in place by a piece of gold wire, was similar to a curiosity which was already in the Society's collection, and about which very considerable doubt had existed, although he believed it was reputed to have belonged to Cleopatra. It appeared to him that if the idea of attaching the teeth together by means of a gold wire had occurred to the gentleman in Ceylon, there was no reason to suppose an equal degree of ingenuity had not been shown on behalf of the beautiful Cleopatra, and it seemed to him that this second specimen made the account given of the first one more easily credible, although he admitted that the wearing of such a set of teeth would hardly render Cleopatra an object of interest, much less of affection.

Mr. J. Smith Turner opined that the specimens might be taken as examples of bridgework, and would, he thought, show greater ingenuity in the person who could wear it, than in him who devised it.

Mr. S. J. Hutchinson remarked that he believed the specimen to which Mr. Weiss had referred was reputed to have belonged to the Queen of Oude, and not to Cleopatra.

Mr. Redman showed for Mr. Gibbons a very ingenious instrument devised to facilitate the removal of fangs which had been hollowed out by caries, and so were liable to crushing by the use of stump forceps. The instrument, as would be seen, was divided down the centre, and at the end was a cubical shaped projection which fitted into a groove made for its reception in the interior wall of the stump. The instrument is held in position by a wedge-shaped bolt, which plays up and down between the blades. Mr. Redman passed round the above-described instrument, together with a fang which had been extracted by its aid. He further stated that he had seen Mr. Gibbons use the instrument to extract four incisor stumps which were hollowed so much as to leave simply a thin shell of cementum. The *modus operandi* was first to gauge with the instrument the hollow in the stump, in order to ascertain the diameter corresponding to the cubical projection. A groove was then cut with a wheel bur, the instrument inserted, the bolt passed up between the blades so as to fix the projection firmly in the groove, and then with a firm pull the stump was removed.

Dr. Mitchell showed some new devices in rubber-dam retractors and napkin-holders. He also passed round two bayonet-shaped chisels which he found highly efficacious in working upon approximal cavities in upper bicuspid and molar teeth. He also showed a gouge which was a modification of one used by Dr. Jack, of Philadelphia. The improvement consisted in so shaping the point of the instrument that the most delicate cut was possible. It could be used either with the hand as an ordinary enamel chisel or with the mallet. A shorter pattern could be used with advantage in a universal socket in the electric mallet. This effected a considerable saving of engine burs when great quantities of enamel had to be cut away.

The Chairman then called upon Dr. Stretch Dowse for his paper. [See page 466.]

STUDENTS' SOCIETY.

THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, held May 14th, 1888.
W. HERN, Esq., *President*, in the Chair.

THE minutes of the previous Meeting were read and confirmed.

The following new Members were duly proposed :— Mr. G. W. Welham, proposed by Mr. Hordern, seconded by Mr. Spray; Messrs. E. F. Smith, W. D. Moon, M. Woolf, E. H. L. Briault, W. R. Larbalestier, and G. Hern, proposed by Mr. Rilot, seconded by Mr. Seymour.

Messrs. W. R. Barrett and J. C. Rogers were duly elected members of the Society.

On Casual Communications being called, Mr. Seymour exhibited a second lower molar having what he described as a supernumerary root and four distinct canals. In connection with this specimen he called attention to the fact that the anterior canals in lower molars take a distinct curve forwards immediately after leaving the pulp cavity, and consequently the Morey Drill should be worked forwards and downwards when enlarging them.

The President then called on Mr. J. Mountford for his paper on "The Diseases of the Pulp and their Treatment."—[See page 504.]

The discussion was opened by Mr. Seymour who introduced to the notice of the Society sheet tin as a suitable material for capping exposed pulps. He recommended the use of the Morey drill as made by Hallam in preference to the Gates-Gliddon on account of its blunter guiding point, and insisted on the advisability of keeping them in carbolised oil when not in use, in order to keep them aseptic and free from rust.

Mr. Baldwin advised devitalising all nerves but those absolutely healthy, that is, those covered by dentine white in appearance, and unsaturated with discharge; he said that a discharge from the pulp caused darkening of the superjacent dentine, and that in such cases devitalisation was the best treatment. He differed from Mr. Mountford in his statement that a swollen face would be the immediate result of filling over an exposure; the immediate result would be pain of a sharp and radiating character involving more than the single tooth, and the swelling would be a subsequent result. He said that pain or pressure was not a certain sign of exposure as in many cases a sensitive layer of dentine would not bear the lightest touch without giving rise to pain exactly similar to that of an exposure. His impressions of iodol as an antiseptic were not favourable.

Mr. Dolamore thought that by using gum mastick over the arsenic dressings, instead of gutta percha, there was less chance of pressing on the exposure, and hence of causing pain. He advocated the use of asepticized blotting paper for capping healthy nerves on the ground of its causing less irritation. He also thought that our decision as to whether to attempt to save an exposed nerve or to kill it should depend to a certain extent on the position of the tooth, that we should be more inclined to attempt it on a front tooth than on teeth far back in the mouth.

Mr. Preedy called attention to the use of cocaine in removing live pulps; he had had two or three cases in which it had answered well by injecting into the organ itself. For permanent root-fillings the iodolized wax mentioned by Mr. Mountford, had, in his hands, worked better than the ordinary iodoform and wax. His experience in the use of dry dressings had not been very favourable.

Mr. Bates also advocated the use of cocaine for the extirpation of pulps; he had found that after applying the powder of the hydrochlorate to the exposed surface of the pulp, he could after a few minutes, pass the point of his syringe between the pulp chamber and the pulp itself without much pain.

Mr. Cowell said he had used cocaine successfully in such cases by injecting in the ordinary way into the gum, and not into the pulp.

Mr. Black thought we could not depend on the sense of smell for the detection of unhealthy pulps, as it was often deceptive. He described the method of capping as advocated by Mr. Matheson, viz., with thin vulcanite caps and Fletcher's Artificial Dentine, and narrated a case in which he had capped the nerve, and on examining the tooth some time afterwards, the nerve canal was found to be quite empty, the nerve having totally disappeared without giving rise to any pain.

Mr. E. Lloyd Williams deprecated capping exposed nerves unless due to traumatic causes. In regard to the subject of dry dressings he regretted to hear Mr. Preedy's unfavourable report, but though his failures were probably due to his not having sealed up his dressings from contact with the fluids of the mouth. In treating pulpless teeth we should bear in mind that we have to deal with a pathological condition of the alveolo-dental membrane, and that there is an exudation from this membrane, which has to be stopped up through the apical foramen under aseptic conditions; and he maintained that the use of dry dressings for this purpose thoroughly excluded from the moisture of the mouth, and changed as often as necessary, was following most closely in the lines of modern surgery. For permanent root-fillings he was not satisfied with the use of wax on cotton wool, and had lately been using a solution of Beta-naphthol in Alcohol or Ether, allowing the solvent to evaporate while it was being packed into the canals.

The President then called on Mr. Mountford who made a brief reply.

The President then said that it only remained for him in the name of the Society to thank Mr. Mountford for his able paper and Mr. Seymour for his Casual Communication, and to announce that the next meeting would take place on Monday October 8th, when Mr. A. Black would read a paper on "Irregularities and their Treatment."

The meeting was then adjourned.

Dental News.

ODONTOLOGICAL SOCIETY.

June 4, 1888. Papers :—"On Some Cases of Epulis." By F. F. Burghard, M.B., M.R.C.S., &c.

"On Some Observations on Metal Cap Crowns." By W. Mitchell, D.D.S.

Casual :—By Willoughby Weiss, L.D.S.

C. J. BOYD WALLIS, *Hon. Sec.*
23, Brook Street, W.

THE DENTAL MANUFACTURING COMPANY.

The annual general meeting of the shareholders of this Company was held on March 29th. Mr. D. D. Hepburn in the chair.

The Report stated that the Company's prospects were good, its position consolidated and business increasing. Increased capital was needed to allow of the manufacture of more artificial teeth, as even their present large output was insufficient to meet the demand. Extension of premises would render increased supply possible.

The Report was adopted.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

ADVERTISING.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

"Elevator" seems to me to have probed his blade in the right direction; for some years I was a member of the B. D. A., but seeing its utter uselessness, so far as putting down quackery and prosecution were concerned, I could not see the fun of paying my subscription every year. At the first, I advocated one important thing which was overlooked, viz., purging the Register,—that should have been the first step, hundreds got on the Register by going before a magistrate and making a false declaration; with the smallest amount of trouble, these could have been removed. Only a letter with a threat of prosecution would have been enough. I took the trouble to bring a multiplicity of cases to their notice, but *no*! nothing was done. Then again, how many Registered Dentists are there at this present time, from 18, 19 & 20 years of age? I need not explain this—In this very town in which I am in practice, we have a Watchmaker, a Barber, a Publican and a Herbalist on the Register, besides Chemists. It would be said, perhaps, they must have been *bona-fide* Dentists as prescribed by the Act at the time, and afterwards adopted another business. But since this is not so; they ought not to be on the Register, but all this is now too late, get them off you cannot.

I do not wish to say one word against the men forming the Council of the B. D. A., I believe they work hard, consider every case, and after spending much time in conclave, they say they will take up the case (*i.e.*) if the solicitors advise it. The solicitor thinks it over, and if he thinks there is a case with a good picking on it, he goes in for it; one case costs about £70 or £80. We have done it! done what? We have got a conviction; the convicted person takes no notice, but begins again with renewed vigour, and says if you do this, I will do that: go on, spend your money. I am sorry indeed to see the valuable time of such gentlemen as we have on the Council of the B.D.A. utterly wasted, they must surely feel themselves that this is so. What we want is a good firm of solicitors, who will take up our cases, watch our interests like the solicitors to the Licensed Victuallers Association and others, who pay so much for each conviction; all then to be done, would be for some dentist in every town to send up each case to the solicitors, and he would not be a lawyer if he did not bite when he saw something at the end of it; I have found them very sure in this way.

Yours truly,

V.D.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I was very pleased to read in your issue of the 15th inst., a letter by your correspondent "Elevator," with reference to the American Dental Institute; a firm of nine American Graduates who have, of late, been advertising in the *Daily Telegraph*, in the usual American bombastic style, the advantages of their genuine (?) and painless dentistry.

I heartily agree with your correspondent in thinking, that it is high time something was done to prevent such a gross and wilful neglect of professional etiquette by men, who, doubtless, consider themselves practitioners of the first water, (although their actions do not suggest it,) and some of whom are graduates of Harvard University, and are therefore expected to be men of a superior stamp. If they have no respect for themselves or their English brethren, they, at least, ought to show due respect to the college of which they are graduates.

There is no need to recall any part of the correspondence that has lately occupied the time and attention of some of our leading English practitioners, with regard to the question of foreign diplomas, but this I would say, that those who were then agitating in favour of the adorning prefix "Dr." and the advantages to be gained in possessing the same, have, indeed, much to admire, (in the specimens under notice, at least,) in their confrères. Their style of work may be genuine enough, but their conduct as true professional men is certainly not, nor is it calculated to raise the American practitioner or the degree in the estimation of our English Licentiates, who are without doubt above employing, or giving countenance to any unbecoming mode of attracting business. If the British Dental Association were established to carry out the spirit of the Dentists' Act, and to protect the interests of the English Registered Practitioners, why does such a state of things exist a day without steps being taken to suppress it. Being a young practitioner, I am deeply interested in the future of the profession, and would very much like to see this question of Dental Quackery firmly dealt with, as it is an evil that is rapidly increasing and almost threatening to undermine the whole social standing of the profession. Surely those of our leaders who have power in their hands, can do something to rectify and improve this existing state of things, which is, indeed, a gross injustice not only to the licentiate, but to the present and future Students who are likely to enter the profession.

In this great age of competition, the motto of which, is "Survival of the fittest,"--*Justice* is needful, and it is the Dental Association we look to and expect this help from; and so the English licentiate may have a fair and equal chance of competing and proving himself of equal standing with the American practitioner, whatever the latter's qualification may be.

I am, dear Sir,
Yours truly,
L. D. S. E.

DENTAL AMALGAM.

To the Editor of the "British Journal of Dental Science."

Sir,

Your contributor, "Dr. S. K. I." on page 493 of your last issue, once more quotes an error made by Dr. Bogue, respecting one of my amalgams, which error has been repeatedly corrected since its first publication.

The alloys assayed—which were supposed to be my manufacture, were most certainly not mine, and bear no resemblance to any alloys made by me. Dr. Bogue either mistook the sample of another maker for mine, or purchased a piracy.

As I have repeatedly pointed out, the question of shrinkage or expansion is a VERY small and unimportant one as compared with the tendency that many amalgams have, to assume a spheroidal shape in the course of a few months, and to lose their adaptation to the cavity; this change is in many cases beyond all comparison greater than that caused by very great shrinkage, and it is one which has been practically ignored by almost all experimenters.

Your obedient Servant.

THOS. FLETCHER.

Hospital Reports.

MONTHLY STATEMENT of operations performed at the London Dental Hospital, Leicester Square, from April 2nd to 30th, 1888:—

Number of patients attended		
Extractions	Children under 14	550
	Adults	1022
	Under Nitrous Oxide	721
Gold Stoppings		232
Other Stoppings		819
Advice		163
Irregularities of the Teeth		113
Miscellaneous and Dressings		377
Total		4002

JAMES F. COLYER, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, Leicester Square, from April 1st to 30th, 1888 :—

Number of Patients attended		2160
Extractions	Children under 14	323
	Adults	536
	Under Nitrous Oxide	745
Gold Stoppings		182
Other Stoppings		663
Advice and Scaling		310
Irregularities of the Teeth		528
Miscellaneous		315
Total		3602

Frank Lankester, M.R.C.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of April, 1888 :—

Number of Patients attended		808
Extractions	Children under 14	677
	Adults	
	Under Nitrous Oxide	56
Gold Stoppings		35
Other Stoppings		66
Miscellaneous		176
Total		1010

Charles H. Smale, L.D.S., Eng., *House Surgeon.*

ANSWERS TO CORRESPONDENTS.

D. D.—We know of no reliable work which treats of the cases to which our correspondent refers. Various papers in the periodical press have appeared which bear upon the matter, but most of these have already appeared in our "Abstracts" columns.

J. R. H., Edinburgh.—If you have read the Journal regularly, you would have seen the subject of practising and qualifying in the Colonies fully treated. If you have not read it, it is your own fault. Every dentist should keep in the stream of dental politics and doings; and the best way to do so is to read the current literature. If you will refer back to your journals you will find all the information you need. As to amount of knowledge required, you will have to know your profession and be able to practice your art skillfully; when you can do this, you need fear no examination.

Studens.—We cannot recommend as to your course of reading; Sir John Tomes' Dental Surgery; Mr. C. S. Tomes' Dental Anatomy; Mr. Underwood's little books on dental subjects will form the basis of your study.

"A Seeker after Right."—It is the duty of a dentist when a patient comes to him from another practitioner who is away or ill, to do what work is needful at the time and postpone all work which can be delayed without detriment to the patient, and then refer him back to the dentist whose patient he is, and to write and tell the brother practitioner what was done to the mouth and why the patient came *et. cet.*

A. N.—Your communication is not suitable for publication, it is too much of the nature of what lawyers call, "special pleading." The facts you state are well known, but they in no way condone the disgraceful practice of advertising to which the firm in question resort. The mere fact that a dentist has obtained the "D.D.S." does not make him a qualified dentist in this country, and, as a matter of fact, none of the names advertised are on the Register. In England, it is usual to merge the D.D.S. in the L.D.S. so that those who desire to follow the best traditions of the dental profession honour the qualifications of the native country, and avoid using an outlandish degree to attract the public by the oft-played tune of "American Dentistry."

BOOKS AND JOURNALS RECEIVED—

Anæsthetics; their uses and administration, by Dr. Dudley Buxton; Messrs. H. K. Lewis, London.—The Students' Manual and Handbook of the Dental Laboratory, by L. P. Haskell, Welch Dental Company, Philadelphia.—Das Füllen der Zahne bei intacter Pulpa, by L. Warnekros. C. Ash & Sons, Berlin.—Irregularities of the Teeth and their Treatment, by Eugene Talbot, M.D., D.D.S.; H. K. Lewis, London.—Journal British Dental Association.—Journal British Medical Association.—Pharmaceutical News.—Independent Practitioner.—Dental Cosmos —Items of Interest.—Dental Review.—Southern Dental Journal.—Western Dental Journal.—L'Art Dentaire. L'Odontologie.—Reveu Odontologique.—Correspondenzblatt fur Zahnartze.—Nursing Record.—Public Health.—Le Progrès Dentaire.—Oerterreichisch-Ungarische Vierteljahrsschrift fur Zahnheilkunde.—Deutsche Monattsschrift fur Zahnheilkunde.—Zahntechnische Reform.—Archives of Dentistry.—Ueber Bissarten und Bissanomalien, by Dr. Alfred Sternfeld—München. Das Ichthyol, J. F. Richter, Hamburg.

COMMUNICATIONS HAVE BEEN RECEIVED FROM

Mr. Charles Smale, Manchester; Mr. Boyd Wallis, London; Mr. F. A. Colyer, London; Mr. F. W. Dumbleday, Dorking; Mr. Newland Pedley, London; Mr. H. K. Lewis, London; Mr. Shipland Skipper, London; Secretary, Odontological Society of Great Britain; Secretary, Students' Society; "D.D."; J. R. Hall, Edinburgh; Mr. Malcolm Morris, London; Mr. Thomas Ryan, London; Mr. Leslie Maxwell, Peterboro; Mr. J. A. Biggs, Glasgow; Mr. R. Ocucomb, Sligo; V.D.; L.D.S.E.; T. Fletcher.

British Journal of Dental Science.

No. 489. LONDON, JUNE 15, 1888. Vol. XXXI.

ON DENTAL REFLEXES AND TROPHIC CHANGES.*

By Edward T. Blake, M.D.

Mr. President and Gentleman,

For the sake of brevity, I propose in my communication to the Society this evening, to use the term "cacodontic," for conditions induced by the presence of defective teeth; by "anodontic" I shall mean disorders set up by the absence of teeth or by their disuse.

Diseases of the dental apparatus affect the health in a very great variety of ways. Some of these are ostensible and most evident, whilst others are so remote, so apparently dissociated from the teeth, that there can be little doubt they frequently escape the attention of the medical attendant.

The local morbid changes, especially the intraoral disorders will be briefly noticed. They more naturally drift to the dentist; palpably, they belong to his domain. But their remains a very large class of general disorders resulting from bad teeth which ought to be considered as dental, though they may be often attributed to some secondary cause. A great number of varying circumstances conspire to drive these cases from the dreaded dentist to the less appalling practitioner, the doctor. The conscientious physician cannot, however, retain them under his care.

The very success that sometimes follows the use of specially selected remedies in cacodontic troubles, is doubtless in a con[illegible] a hindrance to the speedy recognition of the true cause [illegible] patient's sufferings. [illegible] natural that prompt alleviation, nay, even temporary removal of symptoms arising from defective mastica[illegible] insalivation, should stand in the way and tend to obscure the nature of the primary disturbing element. Thus it is quite easy to see that relief having been procured, the need of farther steps is lost sight of—the possibility of a permanent cure is thrust into the shade.

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* Paper read before the Odontological Society of Great Britain.

A freer intercourse between two branches of a great profession—for dentistry is not another profession—the careful cultivation of a complete *entente cordiale* would serve to remove some of these sources of error, and would greatly make for that commonweal for which we all so willingly work.

The general changes induced by dental defects fall naturally under three chief headings :—

1. Some immediately modify the manufacture of new blood both qualitatively and quantitatively by affecting the materials from which it is elaborated.

2. Another class manifest themselves especially by nervous or by cerebral symptoms.

3. Whilst a third variety is made up of the results of distinct poisoning by the morbid materials resulting from the decomposition of dental and of periodontic structures ; these last we will recognise as septic.

To the last category belong both cases of septicæmia, and those of prolonged absorption of disintegrated purulent products. These are perhaps distinct conditions theoretically, they are in fact so frequently combined that practically they may be considered together.

They are certainly much more common and of much more serious import than was at one time thought possible.

The phenomena associated with and resulting from septic toxæmia have been so carefully worked out by Professor Burdon Sanderson and others, that it is needless to dwell on them here.

We shall presently see how interesting a parallelism is presented between the phenomena of dental pus absorption and those of gonorrhœal auto-infection.

1. Nutritional Changes.

The first blow dealt at nutrition is of course aimed again appetite. You all know how small a mouth lesion, parti larly if it be in a mobile part, will impair the relish for f A minute buccal ulcer has been known to abolish it.

An aching tooth often causes complete anorexia. The stage of dental distress is associated with an abnormal f saliva ; witness the rapid deposit of tartar that takes

Then follows a reactive stage of unnatural dryness.

This in turn diminishes the appetite for food.

Again nutrition suffers gravely on account of impaired digestion.

Dental Dyspepsia

has four common causes.

(1) It occurs as a reflex neurosis.

(2) As a result of defective subdivision and insalivation of food.

(3) The gastric mucosa is doubtless directly irritated by septic or by purulent discharges from the gums or from the teeth.

(4) The inspired air being tainted, the digestion suffers through the general dyscrasia induced by the pulmonary poisoning.

The Teeth and the Tonsils.

The influence of neglected carious teeth, in inducing or perpetuating chronic tonsillar hypertrophy, was long ago observed by Liston. It has been carefully worked out in recent times by a very keen observer, Dr. Robert Cooper.* The coincidence of these conditions has of course been commonly recognised. They have been associated as results of a common factor, "scrofula" when that was taken to be a distinct diathesis. Now you are well aware it is usually regarded as an expression of innutrition arising from a variety of causes, some occurring before, and some after birth.

The interdependence of these conditions of tooth and tonsil may be of at least four kinds—

(1) Morbid material may be conveyed directly from a tooth to a tonsil.

(2) The tonsils may enlarge through reflex irritation by way of Meckel's ganglion from the second division of the fifth cranial.

(3) We find, especially in fair children, the whole osseous and glandular system in a faulty state. In such children the decayed teeth and the enlarged tonsils are common results of a common widely acting cause.

(4) The enlarged tonsils aggravate the defective dental condition by compelling the child to inhale air by way of the mouth, instead of by the natural nose route.

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* "Diseases of the Ear," 2nd Ed., pp. 88-90,

Thus, the teeth are exposed to the pernicious influence of abrupt changes of temperature.

The Influence of the Teeth on the Lymphatic System.

Those lymphatic glands which are situated in the immediate neighbourhood of the mouth are occasionally found enlarged and indurated.

Often this is merely the result of local irritation. Either purulent or septic matter from the teeth or from the gums is carried directly to the gland, and there it induces chronic changes which soon disappear on removing the local cause.

As to their histology, these enlargements usually consist of a lymphomatous hyperplasia; they show no new gland structure, though they are often confounded with true adenoma and are sometimes styled "scrofulous." That they may be the direct result of auto-infection is well shown by the following case.

CASE I.

Cervical Lymphoma, with Periodontitis, Caries and Profound Anæmia.

Miss Edith L., aged twenty-eight, black hair and eyes, a white, small fragile girl, with wax-like skin, looking languid and feeble. Since eleven years of age she has had at the angle of the lower jaw two large and indurated cervical glands on the left side.

Our anatomy, aided by the subsequent history, tells us that these glands must have belonged to the deep cervical lymphatic system, because they disappeared on removing carious molars on the left side from the lower jaw.

Here I may pause to remind you of a very valuable diagnostic point. You know that the superficial cervical glands, lying above the sternomastoid have no direct communication with the teeth. If then enlarged glands are found between the platysma and the sterno-mastoid, they are not due to dental disease. Or to put it in a practical form. If the glands move on rotating the head, they are not due to dental changes, and they will not be cured by any dental operations. This is an extremely useful differentiation.

For the cure of these glands, medicines of all kinds had been tried with patient persistence before the case came under my notice on July 13th, 1887.

There was a good deal of pain, seldom absent, in both great occipital nerves, especially on the left side. The great occipital is the internal branch of the posterior division of the second cervical. This pain was much relieved by *gelseminum.*

On having the carious teeth all removed, the glands disappeared without farther treatment. Some temporary teeth were supplied and the general health markedly improved.

Diarrhœa: Constipation.

Many puzzling cases of irregularity of the bowels are due to defective teeth. Some patients suffer from constipation when the teeth are not present or, what comes to the same thing, when they are not employed. Others have diarrhœa from the same cause, and occasionally we see these conditions alternating in the same subject.

It is wise to forbid meat when the teeth are not in working order; and usually a rapid improvement is visible after its suspension. Severe colic is common, especially in servant maids [they usually eat too much, and always eat too fast!], as a result, of neglected and carious teeth. A typical case of this kind is that of

CASE II.

Colica anodontica with Amenorrhœa.

A. H., a young domestic servant, aged twenty, having seen no menses for three months, was seized during the night with severe and agonising pain in the transverse colon. The suffering was soon relieved by *cocculus indicus,* with heat locally applied. The cause of this sudden and severe pain could not at first be made out, for there was no history of chill, no dietetic indiscretion, the tongue was clean, and no organic flaw could be detected anywhere. But on examining the teeth a ray of light was at once let in on the mystery. She was found to have no molar teeth at all, her incisors and præmolars were excavated, fragmentary and ruinous.

Next day she was put under *anemone pratensis,* and in twenty-four hours the catamenia were comfortably re-established.

After this the girl had an abscess in her hand, and she finally had to go into hospital with a purulent depot over one ilium, both of these morbid conditions being possible products of dental innutrition.

2. NEURO-CEREBRAL GROUP.

Commonest amongst these is pain in some distribution of the trifacial. The diagnosis of the precise nature of the pain referred to the sensory filaments of the fifth cranial nerve should never be attempted without a dental mirror and a set of fine steel probes. A laryngeal speculum serves quite well for a dental mirror. We are all familiar with the typical patients who come suffering "agonies from neuralgia." We all know how disgusted those patients are when told that it is a case of common toothache, as the dental probe nearly always proves it to be. Happily, we know, too, how to earn their gratitude by relieving these sufferers quickly by means of a little carbolic acid in the tooth chink, and by some *chamomilla matricaria* given internally. The sorrow will probably recur, though there is no absolute need that even a badly carious tooth must ache.

The pain of periodontitis calls for *calomel* or for *corrosive sublimate*, with a steady avoidance of tea, coffee, and all acids.

CASE III.

Suboccipital Pains and Buried Wisdoms.

Miss Emmeline D., a lady of twenty-seven, came to me from Glasgow, in September, 1884, having suffered from dysmenorrhœa and persistent scalp neuralgia ever since she was fourteen years old.

I found there was a lateral deviation of spine to the right in dorso-lumbar region. The dysmenorrhœa depended on endometritis plus retroflexion. The headaches on being carefully traced corresponded with the distribution of the two supraorbital nerves and the great occipitals. The supraorbital is, you know, a branch of the ophthalmic or first division of the fifth, a sensory nerve suddenly appearing on the surface exposed to great physical changes. The great occipital, a branch of the second cervical, is a frequent site of pain in disorders where the heart reacts on the liver or the liver on the heart.

I found this lady had two complete upper third molars snugly ensconsed under the gum quite out of sight. I had these liberated and one carious tooth removed.

I have just heard from her that there was afterwards a marked and persistent improvement in just those nerves which we should not expect to see better, viz., in the occipitals, but very little change for the better in the branches from the fifth.

Visual Perversions.

Many diseases of the eye have been placed on record as owing origin to dental disorders. Mr. Morton Smale, so well known as the energetic Dean of the Dental Hospital, tells me that amongst other affections of the optic apparatus, iritis, conjunctivitis, and photophobia have been attributed to dental defects.

Here is an extraordinary case, in which the patient, though evidently not blind, was supposed to be so. She succeeded in convincing not only her own medical attendant that she was incapable of seeing, but also deluded an eye specialist to whom she was sent, in an adjoining town. On the removal of some tightly packed teeth, this patient announced that her vision had returned abruptly to its normal condition.

CASE IV.

Reflex Amblyopia apparently depending on Dental Irritation.

Florence S., aged fifteen, was brought to me by her mother from Brockham, in Surrey, on 29th April, 1887. She is a pupil teacher in the village school; she likes her duties and bears a very high character for conscientiousness and truthfulness. She has never been known to malinger. She does not appear to have the histrionic temperament. Vision of both eyes was good till April 8th, 1887, when it began to decline, and since the 15th of that month she says she has seen nothing. The details of her medical history to be gathered from the mother are very meagre. The parents are vigorous and healthy. They declare, as we so often hear, that the child has never been really well since vaccination in infancy. She has had whooping cough, measles, and scarlatina, but no sequela has remained behind.

She has been regular for about a year. The discharge is quite natural in every way. Analysis of urine yielded a purely negative result.

I made a careful examination of all the organs of life, but besides a very shallow method of breathing, there was nothing amiss. The teeth have been causing a great deal of discomfort latterly. I found the pupils dilated and insensible. Accommodation for light and for distance are both in abeyance. On directing the patient to look at the window, she could dimly see the transom, but not the figures on the ground glass.

The girl was pale and inanimate, all the functions of life seemed sluggish and torpid, body fairly nourished. I privately inquired if there existed any reason for desiring to evade her duties. Beyond the tedium of teaching, always, I imagine, specially irksome to the young, there was nothing. No complaints had been made by her respecting her occupation.

I directed the mother to keep the child from employing the eyes.

Sending her on to my friend, Dr. Robert Cooper, he reported that there was nothing in the ears, though the left membrane was perforated, to induce reflex aural blindness. Dr. Cooper gave it as his opinion that the blindness was due to tooth-crowding. The molars were both carious and crowded. Mr. Knox Shaw now made a careful ophthalmoscopic examination, and kindly sent me the following report:--

"April 29th, 1887. I have seen Florence S.; at the present moment I find no gross changes in the fundus of the eye. There is certainly no optic neuritis now, and I should say could hardly have been. The optic nerves are hyperæmic and somewhat swollen, but the edges are distinct and fairly well defined. I should be inclined to consider that she has had some œdema of the optic nerves, the result of reflex irritation. I agree with Dr. Cooper in casting suspicion upon the teeth. She is hyper-metropic, and with the aid of 9 + 1. 5. D. reads Jaeger No. 1, the smallest type of all, slowly. I should fancy *bell* or *apis* were indicated with appropriate glasses.—Yours, &c., C. KNOX SHAW."

I next sent her to the Dental Hospital. Mr. Morton Smale kindly examined her for me, and directed four crowding teeth to be removed at two sittings, and two others which were carious to be stopped. He wrote me on the 12th of May to the following effect:—

The patient you sent to the hospital was so evidently the the subject of hysteria, that I felt convinced in my own mind that was all that was wrong. I sent her to Juler, asking him to examine her eyes, but in no way expressing an opinion as to her hysteria. Here is his reply:—

"'The young girl you sent me to-day is the subject of hysterical amblyopia. The refraction is normal. The fundus oculi is normal and the vision good [$\frac{6}{6}$]. When she arrived she could only read half the test types [$\frac{6}{24}$], but before leaving she could read all with either eye. The blindness therefore exists only in her imagination.—Yours, &c., H. Juler, Ophthalmic Surgeon to St. Mary's.' "

The wife of the clergyman of the village writes, May 20th, 1887 :—

"This day Florence S. had two teeth taken out. On reaching home she read of her own accord for the first time for three weeks in a newspaper. She says the vision returned to her when walking away from the hospital."

Two more teeth were afterwards extracted and some needful stopping done to others. Five days later I received a note in her own handwriting, saying that she could see distinctly. Her vision has not failed since.

This case is certainly one of extreme interest. There is an objection to the application of the term hysterical to this to this class of disease.

It is better to call these cases "reflex blindness," and to reserve the word "hysterical" for those which show manifest immetic manifestations.

To be concluded.

COCAINE.*

By JOHN BROWN, M.D., Anæsthetist to the Glasgow Dental Hospital.

MR. PRESIDENT AND GENTLEMEN,

I have to offer an apology to your Mr. President and this Association for the very short notes I am able to put before you. I have not had during the past winter the leisure necessary to work up a subject of this kind. Besides, there are a great many practical points in connection with Cocaine and Dentistry in which a practical dentist would be the best exponent.

The extraction of teeth is a very small part of a dentist's duty; though a very minor surgical operation, it is a very painful one. To relieve pain has been the aim of the Surgeon, from the very earliest times, not however with much success. The first operation under nitrous oxide—our first anæsthetic—was the extraction of a tooth, which indicates very well the painful nature of the operation. Under nitrous oxide, chloroform and ether, the anæsthesia is general; but in minor surgery only a very small part requires to be deprived of sensation. From the nature of it general anæsthesia has more or less of the elements of danger, and where the operation is a minor one, the administration of the anæsthetic makes it major, because it introduces the chance of death where without the anæsthetic there would be little danger of such a catastrophe. Local anæsthesia on the other hand is much less dangerous than general anæsthetia, and is certainly the method to be employed in all cases where it can be conveniently applied.

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*A Paper read before the Dental Students' Association of Glasgow.

Local anæsthesia has been employed in many cases, and by a few methods: ice and salt, and the ether spray, carbolic acid, &c., have all been successfully used. Ice and salt, and the ether spray are obviously unsuitable for the anæsthesia of the mouth. Carbolic acid has been used as a local anæsthetic and is, I understand, much used in dentistry for toothache. At present, however, the local anæsthetic *par excellence* is Cocaine, and it is of this particularly I wish to speak.

Cocaine is the alkaloid of a plant, a native of Peru, Erythroxylon Coca. Since its discovery as a local anæsthetic in 1884, its use has spread very rapidly. But otherwise, its recognition has been very slow. Coca was in use in Peru at the time of the conquest of that country by the Spaniards, about three and a half centuries ago. Some of the natural products of the new world were early introduced into the old, and received speedy recognition, such as the potato, tobacco, &c. Coca was not appreciated by the Spaniards at first: at the time of the conquest they had more than the usual share of religious bigotry, and they ascribed the virtues which the natives attributed to the coca, as being due to the machinations of the devil. Indeed, in 1569, its use was proscribed, but the Spanish Peruvian mine-owners soon saw that their personal interests were at stake, and their religious bigotry gave way to a tolerance when it was seen that the profits of mine-owning would suffer by total abstinence. The natives ascribed to it the property of making them insensible to hunger, of adding to their strength and vigour, and of relieving oppressive respiration during mountain ascents. After the conquest the cultivation of the coca plant increased for a time, but, in consequence of the hardships which the poor Peruvian Indians suffered for a time under their Spanish taskmasters, they greatly decreased in numbers, and the cultivation of the coca was to a large extent abandoned. Since then, however, the cultivation and use has greatly extented along the west coast of South America.

Specimens of the plant were at various times sent to Europe, but the alkaloid was not obtained till 1860. The discovery was made by Niemann, one of Wohler's assistants in the Vienna laboratory, and it was noted at that time that it had the property of rendering the tongue temporary insensible at the point of contact; but, beyond this, its power of producing local anæsthesia was unknown till 1884, when Dr. Köller, of the Vienna General Hospital, discovered its virtues in this respect. Since that date its use as a local anæsthetic has spread with great rapidity.

The Erythroxylon Coca belongs to the natural order Linaceæ. It is a shrub, and is raised from seed: first in nurseries, till they are 16 to 20 inches high, and then transplanted. At the end of a year and a half the plant gives its first crop of leaves, and continues to do so for about forty years, and sometimes much longer. The first gathering of leaves is not valued at much. After the first the leaves are gathered three and sometimes four times a year. Irrigation increases the produce of the leaves; they are collected by women and children, and carried to the house and spread out in the sun to dry, and then packed in bales.

The Peruvian Indians chew these leaves along with an alkaline paste, made generally from the ashes of plants which contain a deal of lime. It has been supposed that this alkaline paste isolates the cocaine from the leaves, and that the Indians thus get the benefit of the pure alkaloid.

The alkaloid cocaine has a bitter taste, and forms small colourless, inodourless, prismatic crystals, which have a strong alkaline reaction. It is very insoluble in water, one part requiring 704 parts of water for solution; but it is soluble in ether, oil of cloves, and many other volatile oils. Good coca leaves contain about one half per cent. of the alkaloid.

A great many salts of cocaine have been prepared, but none of them are soluble in fats or oils. There is the benzoate, citrate, hydro-bromate, salicylate, tartrate, and the hydro-chlorate. The last is the most generally used. It is a dry, white, granular powder, which consists of crystals of slender white needles. It has a weak acid reaction and a bitter taste.

From experiments which have been made it would seem that coca leaves, chewed or taken in weak infusion, have a stimulating effect upon the nerves of the stomach, and thereby facilitates digestion. Further, in larger doses it raises the body temperature, and consequently increases the frequency of the pulse and respiration. It excites the nervous system in such a manner that the movements of the muscles are made with greater ease. In excessive doses it causes delirium, hallucinations, and finally, congestion of the brain. It dilates the pupil.

Cocaine has the peculiar property of producing local anæsthesia, and this was noted by Niemann, who discovered the alkaloid in 1860. This effect, however, he noted only as applied to the tongue, and its general local anæsthetic effect was only realized in 1884 by Köller, of Vienna. Its effect was first noted in its application to the pharynx, so as to render it more amenable to laryngoscopic examination ; but its use in painful diseases of the eye brought it more particularly into notice, as here the delicate surface of the conjunctiva and cornea leads to the immediate absorption of the drug.

It seems to act by paralysing the terminations of the sensory nerves. It does not act upon the deeper parts, should the application be upon the surface, and therefore in operations, which are more than skin deep, the drug requires to be applied hypodermically. When injected subcutaneously there is first a feeling of warmth, then insensibility to feeling in the neighbourhood of the part in which the injection has taken place, and finally a reddening of the skin. After the lapse of half-an-hour the normal condition returns.

As regards the use of cocaine in dentistry, I may say I am travelling on rather dangerous ground, as here a dentist would be better able to communicate a much wider experience than I have had. I must confess I have had very little experience in the matter. I have seen a tooth extracted after the injection of cocaine, and, according to the patient's statement, without pain. In other cases, however, the pain was not abolished, and it would be difficult to say whethur it had any effect at all. I understand, however, that Mr Woodburn, of this hospital, has communicated some facts about cocaine to some of the Dental Societies, and I presume the students of this Society will have had these facts communicated to them already.

In some experiments made in the dental department of Guy's Hospital it was found that the external application of cocaine to the gum around a tooth made the surface of the mucous membrane quite insensible to pricking or scratching after the lapse of a few minutes. After that the injection of the hydrochlorate into the substance of the gum abolished the pain during extraction. The dose recommended was one grain of the hydrochlorate or citrate in 10 minims water by means of a hypodermic syringe. One half of this to go into the inner, and the other half and go into the outer side of the tooth. The needle should be directed close to the bone and towards the root of the tooth, the contents of the syringe slowly injected, and from five to ten minutes should elapse before the tooth is extracted.

Cocaine has also been used in dentistry to deaden the sensibility of the exposed pulp. The pure alkaloid is preferable to to a salt for this purpose, because being less soluble in water, it is less liable to be washed away by the saliva. A strong solution in oil of cloves is also useful.

In preparing the tooth cavity previous to filling the sensitiveness of the dentine is very effectually treated by using a salt of cocaine, either the hydrochlorate or citrate. The citrate has been especially recommended, as it can be formed into a pellet with the finger and pressed into the cavity, but it is not so rich in true alkaloid as the hydrochlorate, but either of these, on account of their increased solubility over the pure alkaloid, are preferable because they are more quickly absorbed.

When it is wanted to destroy the nerve in the tooth cavity with arsenical paste if a quarter of a grain of a cocaine salt be inserted into the cavity after partial clearing it will anæsthetise the pulp in about five minutes, and enable the operator thoroughly to open the cavity, and expose the pulp directly to the action of the arsenical paste, without pain to the patient.

It is said that in warm-blooded animals when death ensues after an over dose of this drug, it is due to paralysis of the respiratory centre. Most unpleasant results have followed the injection of cocaine, sufficiently so to cause some dentists to give up its use in extractions. The unpleasant symptoms are syncope, twitchings of the face, falling of the jaw, coldness of the body, clammy perspiration, and, in fact, the appearance of impending death.

DISLOCATION OF THE LOWER JAW BACKWARDS.*

By Dr. **Thiem**, of Cottbus.

I have found but very few references to this form of accident in the course of my readings; the only cases I have met with, being one of luxation backwards, unaccompanied by fracture, one complicated with fracture and two cases of congenital dislocation. I am in a position to give you an account of five cases of the kind that have come under my notice, the subjects all being women; four of these were patients of my own, whereas the three other instances, all occurring in the same person, were brought to my notice by Dr. Simmond. A careful examination of the osseous portion of the skull shows us a second hollow behind the glenoid cavity to which I should propose to give the name of tympanico-stylo-mastoid fossa. It is highly developed in the case of women, hardly at all in men; and this difference explains how it is that this dislocation only occurs in women, for the dislocated head lodges in this cavity.

What is the mechanism of backward dislocation of the lower jaw? In children and old persons the ascending ramus is but very slightly developed, and the angle of the jaw is quite short. Owing to this, when the pterygoid and masseter muscles contract, they merely draw the jaw upwards and slightly forwards, whereas in the case of adults the muscles which are inserted into the ascending ramus by drawing the portion of the jaw close to the angle upwards and forwards, make it wabble, and so render a dislocation possible. In all these cases the temporal muscle retains its power, and helps to draw the jaw upwards and backwards by means of its lowest and nearly horizontal portion. The two cases of congenital dislocation may be accounted for by the slight depth of the glenoid fossa, and by this action of the temporal muscle.

The patient who had met with this accident on three different occasions found it occurred each time during a fit of yawning. During the act of yawning, the lower fibres of the temporal muscle are put on the stretch, and when the mouth closes, a kind of contraction, a sort of reaction ensues, which is sufficient to cause a dislocation; in one case the medical man himself produced the dislocation while examining the patient's tongue, by pressing it down too forcibly, when the mouth closed and he was hardly able to withdraw the spatula. In three other cases the dislocation occurred spontaneously during the night, and here, I think, we must assume that there was some rheumatic myositis of the temporal muscle. The method of reduction is simple enough; all that is required is to open the patients' mouth, when the head of the bone slips back at once into its cavity.

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* A paper read before the xii Congress of the German Surgical Society.

AN INPLANTATION FAILURE.

By P. **Merrill**, D.D.S., San Diego, Gal.*

A GENTLEMAN thirty-eight years of age came recently under my professional care, and I learned from him that early in May, 1886, a dentist resident in San Francisco had implanted in the inferior maxilla on the right side two bicuspids to replace two which he had lost in the late Franco-Prussian war. The implanted teeth soon became firm, but after three months or thereabouts one of the teeth loosened and fell out. The other I removed on the 6th of March, 1888. Thus, in less than two years, the operation proved a failure in a subject whose bodily health and vigorous physique were peculiarly favourable for the experiment of implantation. The decalcification began at the point of weakest pericemental contact, and proceeded downward and inward to the root-filling of gutta-percha. It may be assumed that in no case is implantation advisable, because in no instance can life be infused into the dried and perished membrane, and at its best the operation can subserve but a temporary purpose, which could equally well be accomplished by the use of suitable porcelain teeth with roots. These roots, if properly fitted and ribbed and adapted to accurately fit corresponding sockets made by conforming instruments, would probably be retained by encapsulation for a longer time than the natural roots, because not like them subject to resorptive action, nor likely to incite disorder by an irritative action of the resultant débris upon the surrounding vital tissues. There seems, however, to be no probability that, implantation will result otherwise than in a final failure.

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* Repoited in *Dental Cosmos* June, 1888.

REFLECTIONS FROM THE SURGERY.

Subperiosteal removal of half of lower jaw: recovery, with almost entire restoration of the bone and perfect masticatory movement.

Under the care of Mr. Bellamy, Charing Cross Hospital.

Florence W., aged 6, was admitted on January 21st, 1887, with extensive necrosis of the left half of the lower jaw. She had already been operated upon, and excision of the entire bone from the outside advised by a hospital surgeon. This the mother would not consent to; and she was placed under Mr. Bellamy's care.

On admission, the child had a most marked strumous aspect, the left side of the face being enormously swollen, the swelling extending over the temporal region. There was a sinus just in front of the external auditory meatus and one below the angle of the jaw.

On January 30th Mr. Bellamy enlarged the opening in the superior sinus, and removed the condyle, ramus, and angle, and opened up the remains of the sinus just under the angle. The periosteum was free and loose, and retained the original form of the bone in a most remarkable manner.

February 1st. The discharge was profuse and very offensive, although the cavity had been drained antiseptically. On the 7th the swelling began to decrease, and the discharge was quite healthy. On the 14th a small spicule of bone was found loose and removed from near the symphysis.

The child made an uninterrupted recovery, with the exception of some slight paralysis of the orbiculares palpebræ and oris.

Seen on April 24th, 1888. The two sides of the face are nearly equal in size; there is a small cicatrix behind the angle of the jaw; and on manipulation the new jaw feels somewhat nodulated, no doubt soon to mould itself into proper form. The articulation seems to be perfect, and the movements of the jaw as free as possible. In fact, there is no deformity at all. The teeth behind the first bicuspid have gone.

Epithelioma of superior maxilla; excision of entire upper jaw; recovery.

M. S——, aged forty-six, brickmaker, was admitted on Feb. 7th. 1888, suffering from a large and painful swelling in the left cheek. His father died of senile decay at the age of eighty-eight; his mother, of diarrhœa at the age of sixty-seven. Four brothers and sisters are living; six are dead. No history of tumours or phthisis. Always a healthy man. No history of syphilis. The present disease commenced three months previously with a soreness and slight swelling about the alveolar process of the lateral incisor of the left upper jaw. He imagined this to be a "gumboil," and pricked it. The growth enlarged rapidly; there was comparatively slight bleeding and no discharge to speak of, but lately the discharge had become fetid. There was constant dribbling of saliva and a "bad taste in the mouth." At first the pain was not great; but about a month before admission it became severe and constant, and the patient became very weak and worn out. He had not very perceptibly emaciated. The tumour soon began to invade the cheek.

On admission the patient was a fairly nourished man, but rather anæmic. The examination of the face and mouth revealed the following:—On the left half of the soft and hard palates was a fungating new growth, in places ulcerated, and with fetid discharge. Although the growth was not hard there was a tendency to eversion of its edges, and the finger could not reach its posterior limit. The alveolar process was implicated on either side, and on the outer side the cheek attached to the bone was also involved. There was an oblong tumour (as large as a pigeon's egg) fixed to the deep tissues and clearly implicating the skin over it, for the skin was immovable and somewhat dusky in appearance. The veins were, however, not enlarged, and there was no œdema. There was a doubtfully enlarged gland under the lower jaw and another half-way down the neck.

On Feb. 9th Mr. Bellamy removed the whole of the upper jaw. (The operation is described in the remarks.) The patient suffered rather severely from shock.

Feb. 11th.—He is free from pain and has slept well. Temperature 99·4° and 103·6°. He has taken his food well. Four or five ounces of milk and beef-tea to be given every two hours. There is some slight difficulty in swallowing.

12th.—Still no pain. Temperature 103·6 and 100·6°. Antiseptic dressings removed and reapplied.

13th.—Mr. Bellamy examined the wound to-day and pronounced it healthy. He drew attention to the fact there had been no pain since this operation, and attributed this to the local anæsthetic action of the iodoform. Temperature 98·4° and 101°

14th.—There is some nausea; perhaps due to the iodoform. Pulse 84; temperature 101·8°

15th.—Temperature 100°. He is to have four ounces of brandy per diem.

17th.—Quite comfortable; speaks plainer; appetite good. Pulse 84; temperature 99° and 100°.

19th.—There is slight catarrh of conjunctiva of lower part of left eye due to paralysis of the orbicularis, and consequent inability to close the eye.

22nd.—The wound looks healthy; granulations are well formed, and are seen springing up over the exposed portion of the ethmoid. Temperature 98·2° and 99·4°; pulse 80, full and strong.

23rd.—He takes his food well; a little returns each time through the nostril. He sleeps well. The cut tendons of masseter and temporal look greyish, and inclined to slough. Temperature 99·6° and 97·8°.

24th.—Wound healthy; there is little pus. Conjunctiva very injected.

25th.—Temperature 100·3°; pulse 80.

March 6th.—Wire sutures removed from lip. The exposed bone covered my scab. Temperature and pulse normal.

7th.—There is some œdema of the lower eyelid. Conjunctiva seems better. Wound healthy; pus laudable and small in quantity.

8th.—Patient got up to-day. He takes his food well and is very cheerful.

20th.—Patient much stronger, talks more plainly, and, indeed, as far as his general health is concerned "feels quite well."

23rd.—There is again some severe conjunctivitis. Wound perfectly healthy and decidedly smaller than after operation; still dressed as before. Patient will probably soon be made an out-patient.

Remarks.—The diagnosis of the case was clear. A rapidly growing, painful, and infiltrating tumour of the upper jaw can hardly be any but epithelial, especially if the case be so advanced as the present one was, for the skin was implicated. The diagnosis of malignant growth having been made, the treatment was obvious—viz., excision if possible. In this case the growth had not spread so far as to contraindicate its removal, or rather the removal of the upper jaw. The operation of "complete excision of the superior maxilla" was therefore determined upon and performed as follows. The patient being fully anæsthetised, an incision was made according to Fergusson's line—viz., by entering the point of the knife just below the external canthus, cutting along the lower border of the orbit (just below the lower lid) to the angle between the nose and the eye, then along down the side of the nose round the ala and through the centre of the upper lip. The flap thus formed was thrown outwards. Next, the bones were divided by strong cutting pliers. The articulation of the maxilla with its fellow was divided, the nasal process cut through, and then the articulation between the maxilla and the malar divided. By this latter step the wedge-like action of the forceps forced the bone forwards, and so dislocated or fractured its posterior attachments. A pair of lion forceps then grasped the bone, and it was hoped it would come away in one mass, but it proved to be soft, and had to be removed in pieces. There was comparatively little hæmorrhage. After removal of the bone the skin of the flap was examined again, and being found to be implicated was removed, so that a large cavity was left. The bleeding points, which were few, were tied, the wound dusted with iodoform, and antiseptic dressings applied.

The result of the operation was very satisfactory, the patient having quite lost all his previous pain (which was fast wearing him out), and the recovery he has made certainly more than justifies such a severe operation. As to prognosis, it is to be noted that recurrence is the rule rather than the exception, and one cannot safely say that he will be free from the disease. The great cavity left by the operation will, as soon as the ulcerated surface heals, be fitted with an obturator by Mr Vanderpant, Mr. Bellamy's dresser. At present there is no suspicion of local recurrence. What one fears most is that from exposure (the facial nerve being paralysed) of the cornea, ultimate sloughing may take place.

British Journal of Dental Science.

LONDON, JUNE 15th, 1888.

"REVIVE THE COLLEGE OF DENTISTS."

The concluding part of "Home Rule in Dentistry," formulates a remedy for all the troubles which afflict the profession. As in the earlier, so in this part of his pamphlet it is difficult to follow the author critically. He groups his arguments and assertions in inextricable confusion, and goes from part to part by leaps and bounds, and winds up by boldly advocating a return to the most discreditable and misleading methods of the irregular practitioner. He would separate the mechanical from the operative branch of Dentistry. How this is to be done is not stated, but by so doing "any man would take what steps he liked to protect himself." He could "publish a short statement of his position as a Dentist, his mode of practice, and a list of prices for Mechanical Work." In other words, he would throw up the sponge of respectability and become a Quack.

We much fear that the 46 years in which "Scio" has followed the practice of Dentistry have failed to imbue him with a professional feeling, or to give him even a glimpse of that self-respect which belongs to one who realises his position as a member of a liberal profession. There are men who think no shame to blow their own trumpet, to tout in any unseemly way for patients, to receive them much as a shopwalker receives customers, and discovering their wants hands them over to the managers of different departments. They see no incongruity in "Dental Institutes" or such-like arrangements with tradesman announcements of various kinds, and never for a moment imagine that by following such a course they are heaping ridicule and contempt upon what in an evil hour they have chosen to call their profession. This is certainly not the feeling which imbues the gentlemen who are now being educated as Dentists, and the comfort which "Scio," holds out to them that things will "right themselves in time," is more likely to be acceptable to them than the remedy which he proposes.

The great step which is to be taken to put us all right is to "revive the College of Dentists, which ought never to have been suppressed." The last part of this sentence is a strong and clear assertion, but we have tried in vain to find out how and by whom the College was suppressed. We find that certain members seceded from it, and that others remained by it, and that the best of those who remained dropped away from it for reasons which were only too patent at the time, but which we would rather not refer to now. After the sad death of the President, it soon disappeared from the scene, its last public act being to hold a conversazione which finished up with a dance ere the sod was green over the late President's grave.

The College of Dentists was projected by a good man and true, who has earned for himself the gratitude of the whole dental profession, for his honesty of purpose, and determined resolution to do something rather than allow things to go from bad to worse, as they were then doing.

But the men who conducted it were certainly not the picked intellects or the educated members of the profession at that time. Some few of them have since shown themselves to be capable men, but what were they among so many? The rest have passed away into becoming oblivion. The College itself as a Dental College was little more than a name. A series of lectures were delivered on subjects more or less akin to the higher study of dentistry, but as they were delivered by doctors and surgeons they were necessarily treated from their point of view, and so were comparatively useless to the uneducated audiences gathered together to listen to them. The system of examination adopted was, no doubt, the best that could be established under the circumstances, but a well-meant effort to raise it to a higher standpoint was defeated by resort to a poll after the resolutions had been carried at a general meeting of the members. We have thus given a brief sketch of an Institution started with the best motives, which withered and died under the blighting influences of insufficiency and mismanagement. This is the only suppression we have been able to find out. Happily a better project took its place, and the bulk of the members of the College were not slow to see the promise of better things, and preferring their profession to party, acted accordingly.

As we have not heard a wish expressed for the revival of the College from those who were once its best friends, its slumbers are not likely to be disturbed by the windy bombast of an outlaw pamphlet which is unacknowledged either by author or printer.

Peace to its ashes.

CROWN AND BRIDGE WORK.—We would strenuously impress upon our readers the necessity of being well informed, and up to the standard of knowledge of the age in which we live, and not to lack the energy of our American brethren. If report be true, a gentleman who is not legally competent to practise as a dentist in England, started a practice very recently and made a handsome income in about eleven months, entirely from Bridge Work and Contour Fillings. Naturally, the patients he has are those of other practitioners who have not adopted the new systems, or who still delight in the use of large plates and amalgam fillings. The well-to-do English public begin to appreciate American inventions, and unless these improvements are quickly adopted, the English practitioners will soon fall into the back ground; prevention is better than cure. We do not see why our English practitioners should not earn as good fees for Bridge Work as the American practitioners in London are actually doing, many of whom are practising without legal qualification. We have excellent hospitals, where everything connected with dentistry is taught, gold crowns, cohesive and non-cohesive gold, &c. If old practitioners object to join classes with the students, they will have an excellent opportunity to learn on Dr. Parmly Brown's arrival, who, we understand, will give clinic demonstrations for a fortnight, from 10 a.m. to 5 p.m. daily, and from 5 p.m. until 7 p.m. or later on lectures All-Porcelain Bridge Work, Porcelain Crown Work and Gold Crown Work of his invention, and Contour Gold Fillings with the use of the Electric Mallet, the Depressed Rubber Dam, Universal Screw Rubber Dam Clamp, Heroic Chisels, and other instruments, Silver Composition Strips, Moose-hide Polishers, Spring Dental Engine, Revolving Dental Case, and other interesting and new features. If our readers refer to the announcements of the Dental Hospitasl, and also of Dr. Parmly Brown in the *Journal*, they will find every information, and we would advise them to take advantage of these excellent opportunities, which, no doubt, will save them the loss of their patients, who will naturally prefer to go to practitioners who offer artificial teeth without plates or fastenings, and so avoid the necessity of taking them out to wash, as well as obviating the fetor of the breath so usual when plates are worn. Dr. Parmly Brown is well known not oniy throughout America, but also here ; he is a great authority on Porcelain and Bridge Work, and has been received by almost every Society in the States, and all praise his new mode of Porcelain Bridge and Crown Work. It is also universally adopted throughout the States for its naturalness, simplicity and quickness, saving half the time taken to execute other Bridge Work. We have seen the work and can speak highly of it.

MAGGOTS REMOVED FROM A CAVITY IN A TOOTH.— Mr. Jabez Hogg, writing in the Medical Press and Circular, says the case related by the correspondent "Puzzled" is not only "a curious one," but in some respects a singularly interesting one. So far as he knows no precisely similar case has been well enough authenticated to be placed on record in our medical journals. Statements have appeared, and to this effect, that violent attacks of toothache have been traced to a "worm" lodged in the cavity of a decayed tooth. Furthermore, it has been said that the "worm" has been "smoked out," as in the instance now related, by henbane seeds. Such statements have hitherto been regarded with a good deal of incredulity by the profession. It may be mentioned, however, that two or three well authenticated cases have been placed on record, of "worms" lodged in the nasal cavities, there producing alarming symptoms, and which subsided after the worms were dislodged by tobacco smoke. The history of the case as furnished by the correspondent is as follows:—

L. F., a domestic servant, æt. 18, well formed, and, generally speaking, in good health, was taken ill with neuralgic pains of the face on April 5th, 1888. She had on and off for the past three or four months complained of neuralgic pains and toothache. Some five weeks ago a molar tooth was removed. She had much pain for a week after, and under quinine, &c., with occasional doses of chloral, pot. brom., and gelsemium, got well. On the 5th the pain was over the incisors, and in the evening she got some henbane seeds, which she placed over a hot cinder, allowing the fumes to get into the mouth. Soon afterwards she had six or eight maggots drop "out of her teeth" into a tumbler of water she had ready for the purpose. Her mistress was shown them, and we are told they floated on the surface. It transpired subsequently that this inhalation plan was learned from a "gipsy." On the 7th the face was very much swollen, especially the upper lip. It was a case of cellulitis of the face. It was noticed that both incisors had a black streak up the centre, and as the girl used the fumigation of henbane again, another "worm" was discharged, apparently from this cavity. On the 8th the swelling was less, but pus was apparently forming—an alveolar abscess, in fact. The girl's mother said that she suffered herself in the same way when a girl. Other members of the family suffered in the same way, and used to adopt a similar method of "smoking out" the maggots. He continues : Not having hitherto heard of such a case, nor of such a plan of treatment, I think that it may perhaps be of some interest to the profession; and I take the liberty of sending the maggot I obtained from the patient for identification, as I am not able to classify it myself. Your correspondent then is, I believe, justified in considering his case as "unique." But he commits himself to the common error of describing the mounted specimen sent for verification as "one of the worms." It is neither a worm nor a maggot, but a veritable embryo of a parasitic entozoa. It belongs undoubtedly to the Trematoda or fluke family, a class of animals known to infest mankind, as well as the lower animals. The puzzle in this case is how did the embryos of the fluke find their way into the patient's decayed tooth? In one or two ways. In all likelihood the ova of the fluke will have been conveyed into them outh and stomach by eating tainted or infected animal food, the liver of a sheep suffering from fluke ; or the eggs may have been taken in infected polluted drinking water, more frequently, however, in diseased meat, fish, or fowl, which during the masticating process is left behind and safely lodged in a hollow tooth or an exposed portion of the alveolar process, there to be retained until more fully developed into the wriggling embryos which were finally dislodged by the henbane fumigation. It is quite within the bonds of possibility that the patient may have unwittingly suffered from ascarides. In such a case the ova or embryos, during their ordinary larval wanderings in search of a final resting place, which shall prove suitable for their adult condition, might find their way back to the stomach, throat, and mouth.

HEREDITARY POLYDACTYLY AND ANOMALY OF DENTITION.—In the Naturforscherversammlung recently held in Wiesbaden, Herr Thomas, of Freiburg, brought forward a case of the above-named anomaly, which derived especial interest from the fact that there was also hereditary malformation of the teeth. Polydactyly had existed for several generations in the father's family, and similarly dentitional anomalies affected the mother's side. Some of the teeth were always wanting, and the primary dentition in many cases persisted for a long time. The offspring combined both kinds of irregularity, for one child, aged 11 years, exhibited, besides polydactyly, only two upper and no lower incisors. Milk teeth were present, and there was a corresponding defective development of the jaw. A brother had six fingers on one hand and seven on the other, also six toes on each foot; one pair of fingers had grown together; all the rest, together with the toes, were separate and well formed; the condition of the teeth in this case is not stated.

ELECTRIC MOTORS.—The *Electrical Review* deplores the shortcomings of the motors now in common use. A water motor is spoken of in more complimentary terms; its action is said to be eminently satisfactory, one of its best points being that it will stop *instantly*. This is very important in dental operations, but electro-motors have a very unhappy knack, at least, so the patients think whose teeth are being bored, of giving a few extra revolutions after the current is cut off. Here again, we believe, is a large field for operation, if only a cheap, simple, reliable, and effective electro-motor can be produced to run at a very regular speed and which can be *instantly* stopped. Up to the present time no really serious efforts have been made to bring electricity into practical everyday use in such directions as we have indicated above, although the work which has been experimentally done has shown decisively that there are no insurmountable difficulties in the way.

SAGE LEAF DENTRIFICE.—A leaf of pure, simple sage is the best tooth brush and preserver that nature has given to man, says a writer in *Dress*. Keep a sage plant in your dressing room or a branch of it on your dressing table, if you have not a garden from which to pluck it *ad lib.* You may use the sage leaf fresh or dry, it is immaterial how you use it, so long as you use it some way every day. The water with which you rinse the mouth during and after the sage leaf friction, should be just tepid, and a drop or two of myrrh. may be added to the water, as this helps to strengthen the gums and imparts a pleasant odour to the breath.

ANTIPYRINE BLACKENS THE TEETH.—Several persons have on this account refused to make any further use of it, though they had felt the good effects of it in other respects. We have been unable to find any scientific explanation of the way in which antipyrine affects the teeth; we have observed, however, that during its use, the teeth seem to blacken in direct proportion to the extent to which they have lost their enamel. We shall feel happy to submit our observations to our excellent confrére, M. Galippe, in the full assurance that he will wish to go fully into the matter. In one case we were able to restore the teeth that had been darkened to their original colour, by having them washed on several days consecutively with oxygenated water. It would afford us very great pleasure if further observers could confirm the truth of this fact.

IS IT A PUZZLE OR A "GOAK"?—The editor of the *Star* has received the following; it is a shade too deep for us: "Sir,—I have wondered that the Chancellor of the Exchequer has not proposed a tax on false teeth, say 2s. 6d. a tooth. It would bring a lot of money. Then, in the fitness of things, any dentist after a year's profits might, on the refusal by his clients of future services, claim in equity, or, better, by enactment, compensation for his investment, a sum possible to raise by a rate on more fortunate dentists, or at all events, by a tax on all ratepayers, toothsome and toothless alike. Do allow me through your cheerful columns to bring my suggestion to the notice of the Chancellor.—Yours, &c., 'PLUGGED.'"

Cocaine in Tooth Extraction.—The employment of certain salts of cocaine, says the *Lancet*, and even the alkaloid itself, in dental surgery, has now received a fairly wide trial. It must be confessed that authorities here and abroad have arrived at very various results, some averring that cocaine is in all cases successful, while others have relinquished its use. To reconcile these discordant statements is at present quite impossible: we can only indicate the best means of applying this anæsthetic, and warn against its indiscriminate use. As a rule, from half a grain to a grain of the hydrochlorate dissolved in ten minims of water, and injected into the tissue of the gum by two punctures, one on the lingual and one on the buccal aspect of the tooth, ensures a painless extraction. It is best to inject very slowly, and to wait from five to ten minutes after the completion of the last injection before extracting. However, in some persons cocaine fails entirely; nor is it possible to anticipate in whom it will succeed or in whom prove abortive. Simply painting the gum is valueless in tooth-extraction, except as a preliminary to the punctures of the hypodermic syringe, for some persons are as much afraid of the pain incident to the pricking the hyperæmic gum as they are of the more severe operation. Although many persons experience no unpleasant effects from the injection of one grain, yet a certain proportion are painfully and alarmingly upset by its action. Syncope, extreme respiratory distress, feelings of complete prostration lasting for hours, vomiting, great nausea, facial paralysis, muscular paresis, and swelling of the tongue may ensue; thick utterance has been present in many cases; while vertigo, headache, and hallucinations are not uncommon sequelæ of cocaine given hypodermically. As a rule, these symptoms, although very alarming at the time, pass off in a few hours, but may persist for days. Cocaine sometimes loses its anæsthetic powers after the first injection. Many do not recommend cocaine for prolonged dental operations, preferring nitrous oxide gas, which is sure and safe, for short procedures; while others lean to a combination of the two agents.

PAINS AND PENALTIES FOR ADVERTISERS.—It is certainly a matter of satisfaction that the Faculty of Physicians of Glasgow is following the lead of the Irish College of Surgeons in the effort to make their Dental Licentiates carry on their practice in a decent way. The Faculty has, according to the *Medical Press and Circular*, struck out of its rolls one Crocker for violation of his obligation not to advertise, and the General Medical Council has now to form a judgment as to whether they will strike him off. The only person of that man who is registered as holding the Glasgow diploma is registered also as being in practice before July 1878, so that the case is not so simple as it might be.

POPULAR LECTURES ABOUT THE TEETH.—At a recent meeting of the Turnham Green Scientific and Literary Society, in the Girls' Schoolroom, an interesting scientific lecture, "Teeth" (illustrated), was given by Miss J. Rundell; the president, E. C. Boville, Esq., in the chair. The subject was naturally one both of general and individual interest, and the exceptionally comprehensive and detailed manner in which it was treated proved that Miss Rundell had thoroughly mastered her subject. She spoke of the composition of teeth, enamel, dentine, and cement, &c., explaining with scientific accuracy the separate functions of each, then of the varying formation of teeth in animals, graminivorous and carnivorous, pointing out that in the latter the development of canine teeth was enormous while the incisors were small, while with the graminivora it was just the reverse; a tiger's tusk, which she exhibited, serving for fitting illustration of this, and so on. We quote a local paper. We are very glad to find lectures of this kind are becoming very common in girls' schools, they are sure to do much good, especially if skilfully managed.

DENTAL ANOMALIES.—The correlation that exists between the hair and the teeth has been remarked by many observers. Thus Darwin in "Animals and Plants under Domestication," says the *Lancet*, mentions the deficiency of teeth in the hair-less Egyptian dogs, and an analogous case of a Hindoo family in Scinde, in which ten men in the course of four generations were furnished in both jaws, taken together, with only four small and weak incisor teeth and with eight posterior molars. The men thus affected had very little hair on the body ,and became bald early in life. Darwin also quotes the case of the Burmese hairy family, in which, unlike the preceding, there is an abnormal growth of hair on the skin and a deficiency of teeth. Mr. Crawford, in "Embassy to the Court of Ava," in 1829, describes Shwé Maong, the father, then thirty years of age, as being of the average height of the Burmese, covered with silky white hair upon all parts of the body, especially over the shoulders, where it was five inches long. He had only four incisors in the upper jaw, and in the lower four incisors in the upper jaw, and in the lower four incisors and the left canines. He stated that he did not shed the temporary teeth till twenty years of age. King Theebaw presented him with a wife, and one at least of several children born, and that the sole surviving one, was born hairy. She (Maphoon) was stated by Mr. Crawford and by Captain Yule, who visited the coast of Ava later, to be almost edentulous. Recently Maphoon, now about seventy years of age, has been on exhibition at Washington, and having some trouble with the mouth, was seen by a dentist (Dr. Daly) of that city. He removed fifteen teeth, showing that the deficiency in number was not so great as was thought to be the case ; but that teeth and hair are correlated to some extent was shown by two pairs of teeth being "geminated," two upper molars being joined together by their roots, and a lower second molar and wisdom tooth united by both crown and roots. One son of Maphoon is also on exhibition, but his mouth was not examined. The hairy Burmese family were on exhibition in London last year, but we do not know whether any examination was then made of the dental organs.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

ROOT FILLING.

By G. W. Entsminger, D.D.S., Carbondale, Ill.

The writer advocates saving some of the many pulpless teeth which are extracted simply because they are pulpless and perhaps abscessed. The essential in root filling is thoroughness; having diagnosed the case, the instruments used must be perfectly adapted to the case in hand, and must cleanse the canals of all foreign substances, thoroughly disinfect and thoroughly fill. The materials to be used are optional, the writer believes in gutta-percha as a filling. Referring to immediate root filling, he quotes several writers. One says: "fill all canals at one sitting." Another says: "medicate all canals for a period, at intervals." Another becomes more liberal and says only a certain class of patients can be counted as good subjects for immediate root filling, with this, one we will more likely agree, this one also says that certain cases will not permit of the so-called heroic treatment. It requires careful observation to make a correct diagnosis as to the time of filling, and experience then is our best teacher. With all the theory in existence and no practice, if we attempt root filling, we need not be surprised if failures occur. The man who fills immediately and has success every time is a man of experience, hence we must be able to diagnose properly and then to sustain our diagnosis by the result of the operation.

BICHLORIDE OF MERCURY IN DENTAL PRACTICE.

By Louis Ottofy, D.D.S., Chicago, Ill.

After referring to the great revolution in our views of the pathogenesis of disease caused by the study of bacteriology, the writer refers to the bichloride of mercury, speaking highly of its germicidal action. The uses of this agent in dental practice are almost endless, it can be safely resorted to in all operations in which the result depends on the destruction of spores or microbes, which are now generally accepted to be instrumental in creating or maintaining diseased conditions. It can be used in solutions of from one part in two hundred of water to one part in two thousand. Weaker solutions than 1-2000 are not effective for sterilization. To make a stock solution on hand, take 100 grain mercuric bichloride and add it to 1,000 parts of water at one time. This quantity requires the addition of alcohol, as the bichloride is not soluble in water to the extent of 100 in 1000. This may be kept in a cool and dark place, and from it three solutions should be made, namely :

One of one part in 200
" " " " " 500 and
" " " " " 1,000,

in quantities regulated by the amount of each as may be required. The 200, 500 and 1,000 solutions are used only in small quantities, hence an ounce vial of each in the operating case is all that is necessary. To prepare them, take from the pint bottle

Ten parts to 190 of water : makes one in 200
" " " 490 " " " " 500 and
" " " 990 " " " " 1,000.

A tumbler, bottle or small pitcher full of the latter should be made each day for the wash stand to be used as it is or it may be diluted with one half of water, making a 1 in 2,000 solution to be used for purposes mentioned hereafter. In opening into a cavity for any purpose whatever, and whether after or before the application of the rubber dam, the cavity having been dried, should be flooded with the 1 in 1,000 solution. This solution should be used for sterilizing exposed pulps and disinfecting cavities when they extend near to the pulp. It is the solution *par excellence* to be used in implantation, in it all instruments used in this operation should be dipped, and the hands, towels, syringes and anything else which may come in contact with the tooth or mouth should be moistened with it, for success in implantation depends mainly on perfect sterilization. The minimum dose of the drug gr. $\frac{1}{20}$ is contained in fifty drops of the solution, (1 in 1,000) hence no fear need be entertained in regard to the poisonous action of the drug. The 1 in

200 and the 1 in 500 solutions must be used carefully, the former contains the minimum dose of the salt in 10 drops and the latter in 50 drops. These solutions are used principally in root-canals and the quantity and strength to be used should be governed by the size of the dental foramen, as is generally indicated by the instrument used or by the age of the patient. In cases where immediate root filling is practiced, the use of the bichloride of mercury is essential. Its rapid and certain action in destroying disease germs and its preservative quality are brought into prominence. In teeth where the dental foramen is large, the 1-5 per cent. solution (1 in 500) should be used cautiously, while the 1-10 per cent. solution (1 in 1,000) may be used with impunity. The ½ per cent. solution (1 in 200) is used in root-canals whose foramina are small. The writer used this solution for painting those small irritable patches, which cause so much annoyance to those afflicted with them. These mucous plaques seem to have a certain course to run. They begin as a small irritating red spot, almost anywhere on the mucous membrane of the mouth or tongue, become gradually larger, generally about the one-twelfth of an inch in diameter, their surface is white or grey, and when in contact with the teeth, or when situated in folds of the mucous membrane are very tender and painful, on the third and fourth day they are generally almost unbearable, and by the seventh or eighth have entirely disappeared. By touching these spots three or four times a day with the 1 in 200 solution, their progress is generally checked, though in some cases merely improved, but in either case they are less painful and disagreeable. The 1-20 per cent. (1 in 2,000) solution is used for washing the hands, spittoon and instruments, the latter are dipped in it and rapidly wiped and rubbed clean, and when thus treated do not corrode; of the forceps generally only the beaks need thus be treated. In this strength it may also be used as a mouth-wash, half of the solution and half of listerine, adding a few drops of some perfume.

ANTISEPTICS AND GERMICIDES.

By P. J. Kester, D.D.S., Chicago, Ill.

Fermentation is due to the presence of low forms of vegetable life; suppurative processes are analogous to fermentation. Caries of the teeth, the most prevalent of all affections, is due to bacteria. Pyorrhœa alveolaris is without doubt a product of a specific organism, suppuration, the formation of abscess, seems to have been proven to be but the manifestation of the presence of some variety of the staphylococci.

I. Bacteria are not normally present, but are conveyed to fluids or tissues from without. (Such treatment as would exclude them would be the aseptic.)

II. Being alive, the environment must be favourable to their development.

III. Any chemical substance which prevents the development of bacteria is a true antiseptic—and

IV. Such agents as destroy the micro-organism are germicides.

Antiseptics may be divided into two classes,

I. Those agents which exert an inhibitory power on the microbe itself—*e.g.*—heat and cold, alcohol, salt, borax, hydronaphthol, &c.

II. Substances which render the conditions unfavourable to the growth of the micro-organism, sulphate of iron, chloride of zinc, sulphate of zinc.

All germicides are antiseptics *per se*, but all antiseptics are not germicides, *e.g.*, iodoform, hydronaphthol. Koch and Wolfhügel found that a temperature of 100 deg. C. (212 deg. F.) maintained for an hour and a half would destroy bacteria without spores, but to destroy the latter the temperature must be increased from 230 F. to 284 F. and continued for from one hour and a half to three hours ; heat cannot be used in dentistry. The perfect drying of a root by warmed air will not destroy germs or spores.

The writer then quotes a list of antiseptics and germicides.

Eminently antiseptic,	Mercuric Iodide	1-40000
	Silver Iodide	1-33000
	H_2O_2	1-20000
	Mercuric Chloride	1-14300
	Silver Nitrate	1-12500
Very strongly antiseptic,	Chromic acid	1-5000
	Chloride Gas	1-4000
	Oil of Mustard	1-3353
	Salicylic Acid	1-1000

Strongly antiseptic,	Zinc. Chloride	1-526
	Mineral Acids	1-500
	Carbolic Acid	1-333
	Creosote	1-200
Feebly antiseptic,	Arsenious Acid	1-182
	Boracic Acid	1-142
	Ferrous Sulphate	1-90
	Sodium Borate	1-14
	Alcohol	1-10
	Sodium Chloride	1-6

The proportions given in the table are the ones in which they are antiseptic, *i.e.*, they will prevent the development of germs, but a much higher per cent. is necessary to destroy them. Mercuric chloride, for instance, is antiseptic in 1-14300, but Koch found that a 1-1000 solution was required to destroy all bacteria with their spores. Hydrogen peroxide, which has an antiseptic power in 1-20,000, fails as a germicide in much less than 1-125. The addition of an acid to the solution prevents precipitation. The acid which he found the most satisfactory was tartaric, in the following proportions :

R.	Mercuric chloride	1.
	Tartaric acid	5.
	Aquæ dest.	1000.]

This preparation he found destroyed the fœtor in suppurating wounds in a very short time, and these were his conclusions :

I. Acid solutions of mercuric chloride exert the effects of the drug even in albuminous fluids.

II. That the acid increases its antiseptic powers so that weaker solutions are required.

III. The acid sublimate does not interfere with the employment of other measures, as caustics, iodoform, &c.

IV. It is non-irritating.

The foul odours of a septic root may be overcome by it in from five to ten minutes. Dr. Harlan recommends equal parts H_2O_2 and $Hg\,Cl$, (1-1000) equal parts as a powerful germicide. According to Sternberg an 8 per cent. solution of carbolic acid was necessary to destroy a pus micrococcus from an acute abscess.

Dr. Black's mixture	Carbolic Acid, - -	1
	Oil Wintergreen, -	2
	Oil Sassafras, - -	3

is a very pleasant antiseptic for rendering instruments aseptic, for root dressings, pyorrhœa alveolaris, &c.

AN IMPACTED TOOTH.

By G. V. Black, M.D., D.D.S., Chicago, Ill.

A lady presented herself at the Infirmary of the Chicago College of Dental Surgery for examination of a little tumour situated in the median line of the hard palate just a little back of the alveolar ridge. The teeth of the upper jaw had been extracted a year or more, and an artificial denture had been placed in the mouth which was supposed to have caused irritation at this point. At length the denture had to be given up. The tissue over the tumour appeared normal, except that there was a slight glassy look. Now sensitive to light pressure, but heavy pressure was painful. The patient stated that it soon became very sensitive when she wore her artificial teeth. A small exploring instrument was passed through the soft parts in the centre of the tumour. At a little distance it came against a hard body upon which it slipped. By changing the direction slightly, so as to bring the point squarely against the hard body, it was possible to tap it lightly with the point of the explorer with a sound like that given by enamel. Both this and the slipping of the small point on the body indicated the crown of an impacted tooth. Enquiry from the patient elicited that she had been told by dentists who had operated upon her that she lacked one of the front teeth, and from her statements it was concluded that it must have been a lateral incisor. Yet the fact that the cuspid is much more frequently impacted, made the case doubtful. A crucial incision was made through the soft parts lying over it and an attempt made to extract it with a pair of slender-beaked forceps, but the bone about it was so resistant that it was impossible to get the beaks fully on to the crown. With an elevator he cut and prised away the bone about it, after which he succeeded in removing it with the forceps, and found it to be a full-sized cuspid tooth with a full length root perfectly formed, except a short bend near the apex. The principal point in this case is the diagnosis. No harm can result from thrusting a needle-like exploring instrument, or a small grooved needle into such a tumour as this, or indeed any other. And in case the sharp point strikes against a hard substance upon which it slips, and the sound elicited by tapping is of a higher tone than that from bone, the cause of the swelling can be nothing else than an impacted tooth. There is nothing else that could be in such a position that would have these qualities. The impacted tooth may be a supernumerary, or, in case the teeth have been extracted as in this instance, the patient may have no knowledge that there was a missing tooth. On the other hand, when the teeth are all in place but one, that one may have been extracted and the fact forgotten by the patient. In another case presented in the Infirmary a tooth was found deep in the tissues between the roots of the first molar and second bicuspid (upper jaw), the second molar was in place, and none of the wisdom teeth had been yet erupted, the patient being only eighteen years old. In this case there could be no history of a missing tooth. In another a wisdom tooth was found and removed, which was deeply seated in the ramus of the lower jaw that had caused an abscess opening on the face. In this case the patient declared that the missing tooth had been extracted several years before, and all of the other teeth were in place, which fact seemed to place his evidence in the matter beyond question.

DENTISTRY IN RUSSIA.

By W. Witt, D.D.S., Chicago, Ill.

Dental education is in a decided embryonic state in Russia. The study of special dentistry is very limited, dental surgery and prothetic dentistry being the only branches to which any attention is given. Foreigners must live in the country three years before being admitted to any of the universities, and after having successfully passed the prescribed examinations they are admitted to practice. The class of people treated ranges from the lowest to the highest, and in some cities it is the practice of dentists to have two operating rooms, one for the treatment of those who are unfortunately classed with the lower element, and the other operating room is reserved for the better classes. For filling materials the cements are in great favour for the anterior teeth and amalgam for the posterior, gold is used only to a limited extent, partly because of the cost and partly because the patients do not appreciate the skill and labour, and but few operators possess the requisite skill. The general fees for the treatment of pulp, or application of remedies is from 20 to 50 kopecks, (1s. to 1s. 6d.), for cement fillings 2 rubles (6s. 6d.), amalgam filling 3 rubles (9s. 10d.), gold fillings average about 5 rubles (16s.) each. The most remunerative branch of dentistry is the prosthetic. The fees for this class of work are : A vulcanite plate with one tooth, or a case of repairing, 3 rubles (9s. 10d.), and each additional tooth 2 rubles (6s. 6d.) Gold is seldom used as a base for artificial teeth and when restored, the fee is generally 5 rubles (16s.) per tooth. In some places the fee for vulcanite is as low as 1 ruble (3s. 3d.) per tooth, and the same for cases of repairing. It is a common practice to leave the roots of broken teeth in the jaws, firm roots are permitted to remain almost invariably and loose ones are very often permitted to remain. The obtaining of suitable instruments and dental materials is connected with many unpleasant annoyances, aside from the heavy duty imposed upon them, it is often difficult to get some classes of manufacture over the oundary.

MANIPULATIVE MISCELLANY.

AN ELECTRICAL THERMOMETER.

Mr. Braun, the inventor of the instrument which was devised to keep the right temperature during vulcanisation thus describes it. "In appearance it is similar to the ordinary thermometer, but in the bulb and down the column are inserted two fine platina wires, one of which is soldered to the casing, and the other is insulated and brought through the top to a small terminal. Another terminal is fitted to the casing. The quantity of mercury is so arranged that when 315 degrees is reached the column of mercury makes contact with the platina wire, and by means of a small electro magnet in a gas-tight box, through which the gas passes, the armature is brought up in such a manner as to shut off the supply. A small quantity, however, escapes through a bye-pass to prevent total extinction. It is worked by a single Laclanche cell, which could also be made to ring an alarm when the time had expired, or automatically turn out the gas, or both. As it is only fair to prevent others falling into the same errors I have made myself, I will describe my former attempts and failures.

"No. 1 was constructed on the principle of the thermostat, in which the gas passes over a column of mercury which rises and closes the aperture—very correct in theory but useless in practice, for the mercury at such a high temperature volatilised, and consequently got beautifully less, making things too uncertain to be pleasant.

"My second attempt was to place between two half balls a leather washer, which I thought would rise by the heat-expanded air and close the gas supply, but it did not. India rubber was tried instead, also a thin German silver disc in vacuum, like an aneroid barometer, but the heat unsoldered the end and made me weary of spirit.

"For some months past I have been using a Griscom motor to drive the dental engine, and find great convenience in having a switch or presette (as they call them at the electrical shops) close to the hand-piece, which prevents the necessity of going to the wall to switch off. I shall shortly rig up a 10 c.p. lamp in a case with a glass rod projecting therefrom, which I believe will be more convenient than the non-thermal lamp."

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, held May 7th, 1888.

Mr. J. HOWARD MUMMERY, M.R.C.S., L.D.S., *Vice-President*, in the Chair.

THE minutes of the last meeting were read and confirmed.

The CHAIRMAN read a letter from the President, in which he stated that he had been prevented from attending the meeting by matters of the greatest moment.

Mr. H. Lloyd Williams, having signed the Obligation Book, was formally admitted to membership.

Messrs. Richard Fairfax Reading, M.R.C.S., L.R.C., L.D.S., of Elizabeth Street, Hyde Park, Sydney, N.S.W., and Daniel Corbett, jun., M.A., F.R.C.S.I., of 12, Clare Street, Dublin, were balloted for and elected Non-resident Members of the Society.

The Librarian (Mr. Felix Weiss) notified that a new copy of Sir John Tomes' "Dental Surgery" had been presented by Mr. Fairbank, the old copy of the work having become much worn. The Society had also acquired "The Quarterly Journal of Microscopic Science for April," "The Journal of Anatomy and Physiology," "The Proceedings of the Royal Society," and "The Dental Review."

The Curator (Mr. Storer Bennett) showed a specimen of a case of true gemination of the two right lower bicuspids, deposited in the Museum by Edward Pearce, Esq., of Greenwich.

The roots, which are fully formed, are spirally twisted around each other, so that the labial surface of one crown looks in the direction of the lingual surface of the other.

The specimen was removed from the lower jaw of a young man about twenty years of age, on account of the pain it was causing him. All the other teeth were present and normal in character.

Mr. Storer Bennett also showed a very interesting specimen presented to the Society's collection by Mr. Balding. It was from a case of gemination of two large upper incisor teeth on the lingual surface of which were two enamel growths of small size.

These might be regarded, he thought, either as a very large cingulum or as an odontome. The cases were of singular interest.

Mr. Morton Smale said that he was desirous of showing to the members some ingenious electrical contrivances due to Messrs. Coxeter. The apparatus in question had been in use during the post-graduate course lately held at the hospital, and so he had taken the opportunity to keep it there to explain its working. In a few words he might point out that there was a motor, a light used for illuminating the mouth, a search-light, and electric mallet. The action of each of these he proposed to demonstrate after the meeting before such members as would like to become familiar with them.

In reply to a question from Mr. Woodhouse, Mr. Smale stated that discs used in separating did not stop. The battery was composed of chronic acid and sulphuric acid cells, but the exact arrangement was the private secret of the firm. The cost of the apparatus was about £30.

The Chairman then called upon Dr. Blake for his paper. [see page 547.]

Dental News.

MIDLAND BRANCH OF THE BRITISH DENTAL ASSOCIATION.

MEETING AT YORK.

THE annual meeting of the Midland Branch of the British Dental Association was held recently, at the Institute of Science and Art, York. In the morning there were demonstrations by Mr. M. Johnson, Chester, "on preparing and mounting sections of teeth, for microscopic examination; by Dr. St. George Elliott, London, who fixed a gold crown on a lower molar, the stump having been prepared by Mr. G. Brunton, Leeds; by Mr. G. G. Campion, Manchester, "on Balkwill's method of rotating incisors," and by Mr. G. Brunton, Leeds; on "the use of the matrix." At the meeting which was afterwards held, Mr. T. E. King (York) the President for the year, occupied the chair, and there was a good attendance.

THE PRESIDENT'S ADDRESS.

The President, in his opening address, said that although dentistry was so closely connected with general surgery, it differed from all other specialities in the great advantage it possessed in having a special education of its own—(hear, hear)—thus making it distinct from, and giving it a lead over, all other specialities. This education, embracing a thorough knowledge of anatomy, physiology, chemistry, and pathology, formed a common ground for consultation with general practitioners, and also provided an exact aid to diagnosis in cases of diseases of the eye, ear, and contiguous parts in sympathy with the teeth. These advantages were much increased by the dental student receiving part of his education at a general medical school, and mixing and associating with the students who were studying to become general practitioners, thus laying the foundation for mutual respect, and doing so much to dispel that narrowing tendency which they, in common with all specialists, were liable to succumb to. Whatever advantages, social or educational, the surgical and medical qualifications which were open to them had given, or now gave, to them, as a profession, or as individuals, it was generally recognised that they were in no sense higher dental qualifications, neither could they be regarded in the same light as University degrees, as there was a great amount of technical, surgical, and medical knowledge to be acquired which the student knew he would never be called upon to bring into use. (Hear, hear.) Dual qualifications of that kind had a tendency to produce a conflict of sympathies and interest, and were consequently a source of weakness. According to the ordinary law of the survival of the fittest, one of them would have to succumb, and he thought they ought to be grateful to Mr. Bullin for the bold way in which he urged the claims of the dental diploma during his presidential year. (Hear, hear.) He trusted that in the course of time the Universities might be prevailed upon to grant dental degrees, and the colleges higher dental qualifications, thus giving encouragements to those who wished to continue their studies, and increase their scientific knowledge in a progressive direction, instead of wasting their energies on the deviating and cumbersome surgical and medical qualifications which were at present the only resource for those who were not satisfied with the bare qualification made necessary by Act of Parliament. (Hear, hear, and applause.) He believed that association afforded great advantages, and that there was a growing appreciation of the value and necessity for intellectual interest in their profession. Their welfare in the future depended so much upon the use they made of the privileges the association afforded, that no one had any excuse for standing aside. Before the year 1856 there had been no successful attempt to form any organisation of dental surgeons, and it was only after considerable difficulty and much hard work that the Odontological Society of Great Britain was firmly established as a voluntary institution. The meetings of the Odontological Society being confined to London, it left a large proportion of their profession in the provinces without that opportunity for mutual intercourse which was essential for progression. The idea of forming local societies had doubtless been previously thought of, but it was their energetic secretary, Dr. Waite, who first really mooted the question, and presented it in a practical form in an excellent article in the *British Journal of Dental Science* on "Dental Societies," in the year 1866. The basis of Dr. Waite's scheme was that local societies should be formed, not independent of, but as branches of, the Odontological Society, which he thought would thus become in deed what it really was in name, the Odontological Society of Great Britain. The scheme received little support until the year 1874, when the feeling that something must be done became general among the more active of the provincial members of the profession. In March, 1875, the *Monthly Review of Dental Surgery* proposed the formation of a separate organisation, to be called the British Dental Association, to be conducted on the same lines as the British Medical Association, and the President alluded to the steps which were afterwards taken to form such an association. Branches had now been established in various parts of the country, and although there was still no metropolitan branch, they hoped soon to see one formed, so that the association might be fairly representative of the whole kingdom, and all parts of an equality. Their aim should be consolidation, and to avoid anything which would cause disunion or even tend to divide them into a London or provincial party. The matter rested entirely in their own hands. They had seen what the British Medical Association had done, and they had seen what had been done in the past amongst themselves by such men as Mr. Dennant, of Brighton; Mr. Mc Leod, of Edinburgh: Mr. Lee-Rymer, of Croydon; their own hon. secretary, Dr. Waite, and many others. These men had travelled long distances, at great expense of time and money, and had had to work single-handed and under great difficulties and opposition, and had always been to the front in all matters of reform, enforcement of the Dentists Act, or correction and expurgation of the register. (Applause.) If only the mass of the profession would come forward, join the association, and take an intelligent interest in its welfare, an increased number of courageous and energetic workers would be ready to advance where duty called, and push forward the work of their great pioneers, so that in a short time their association might compare favourably with any other, and be in deed what it was really in name—the British Dental Association. (Applause.)

Mr. H. Blandy (Nottingham), in moving a vote of thanks to the President, said that dentists ought to be educated as dentists first, and not as surgeons. They had now in connection with medical schools great facilities for teaching dental students, and if they established a dental college for teaching dentistry, where were they going to get their staff, and where would they locate the college? Now that they had settled down to a certain curriculum, it was a great pity to disturb in the students' minds the present state of things. He had been informed that the College of Surgeons, backed up by the British Medical Council, had permitted surgeons who attended a three months' post-graduate course to take the "L.D.S." degree. If that were so, he thought that association ought to protest against it with all the energy in its power.

Dr. Walker said that Mr. Blandy had been misinformed with regard to that matter.

Mr. F. Bullin (ex-President) seconded the resolution, which was supported by Dr. Waite (hon. secretary), and agreed to.

DENTAL SERVICES IN ELEMENTARY SCHOOLS.

Mr. H. Blandy (Nottingham) opened a discussion on the question, "On what basis shall dental services be rendered at public elementary schools?" He referred to the regulations in force in the army and navy, under which persons were disqualified from entering the services whose teeth were deficient. The postal authorities, he added, had issued suggestions to their medical officers in the different towns to inspect the teeth of candidates for admission to the postal and telegraph services, and he knew that in Nottingham several candidates had been rejected whose teeth were deficient. Then came the question, what should be done with the children, because it was clear that boys seeking to get into the army or navy or the postal service, must have their teeth attended to from their earliest years. At Cambridge and in London it was urged upon them to educate the public to a sense of the importance of their dental organs. It was suggested that the children in public elementary schools should have their teeth attended to, but on what terms would they attend to these children's teeth? Were they going to do it for nothing, as a purely philanthropic work, or were they going to charge a penny or a shilling per head? It was very clear that School Boards had no authority to spend the ratepayers' money on dental services, and he did not think that dentists—busy men as they were in their own private practice—were prepared to undertake the care of several thousand children's teeth; so that, so far as the education of the public went as to the necessity of care of their children's teeth, he thought they came to a dead stop. He brought the subject forward in order to give an opportunity for practical suggestions.

Mr. Storey, Hull, said that so far as the public elementary schools were concerned, he thought they might do something in the way of getting instruction given to the children as to the care of their teeth. He was quite sure that the parents of the children would be anxious that their children's teeth should be cared for in a proper manner. He suggested that some elementary treatise should be prepared as to the care of the children's teeth. If they could do something to stir up the teachers and get them to give instruction to the children, that would be a first step in the matter. So far as Government responsibility was concerned, that meant taxing the ratepayers; and it seemed to him that they were a long way from the time when that would be done.

The subject then dropped.

ANÆSTHETICS.

Mr. F. H. Weekes, surgeon, York, read a paper, in which he described the various anæsthetics, which, he thought, ought always to be given in the presence of a medical man.

In the course of the discussion which followed, Mr. Buliin remarked that it was a new doctrine to him to be advised to send for a medical man to administer anæsthetics. He thought anæsthetics were within the province of the dental surgeon.

Mr. Brunton stated that for large operations he preferred chloroform to ether. He could do more when the patient was under chloroform than when under ether.

Mr. Horsfall, surgeon, Leeds, said he had been interested in the subject of anæsthetics for five-and-twenty years. One or two points in the paper struck him as not in accordance with facts which he himself had experienced. First, with regard to nausea, he was quite sure that since the introduction of ether he had seen more nausea from ether than from chloroform properly and skilfully administered. With regard to patients struggling, his own experience was that struggling under chloroform was almost *nil*, and under ether it was very much otherwise.

In his reply, Mr. Weekes remarked that when he said that a medical man ought always to be present when an anæsthetic was given, he perhaps ought to have modified that statement by saying that the person ought to be qualified and know how to deal with the great dangers of failure of heart and failure of respiration that might happen at a moment's notice and without any warning; and he maintained that if a dentist was qualified to deal with these he had crossed the borderland and was a medical man. As to the best form of anæsthetic for short operations opinion was in favour of gas; but for large operations he had a preference for ether. Mr. Horsfall's experience with regard to the comparative amount of nausea from chloroform and ether was very different to his. He (Mr. Weekes) had seen most intense nausea and vomiting from chloroform. With regard to struggling, if they gave a large dose of chloroform they blunted very quickly the sensitiveness of the mucus membrane of the glottis, but given in that way there was a great increase of danger. With ether, he knew that there was a very large amount of struggling.—A vote of thanks was passed to Mr. Weekes for his paper.

Mr. T. M. Nicol, Leeds, read a paper on "Dental Education."

Mr. F. Harrison, Sheffield, next read a paper on "Cases in Practice," and the meeting was brought to a close.

ACTION FOR RECOVERY OF FEES BY A DENTIST.

G. J. Lucas *v.* J. P. Strickland.

An action was brought at the Gravesend County Court, on Tuesday, by Mr. George John Lucas, surgeon dentist, against Mr. Joseph Probert Strickland, upholsterer, &c., of Gravesend, for the sum of eleven guineas for a set of artificial teeth supplied to Mrs. Strickland, and for professional attendance. Mr. Paul Taylor (instructed by Messrs. Tolhurst, Lovell, and Clinch) appeared for the plaintiff; and Mr. H. C. Richards (instructed by Mr. C. R. Gramshaw) for the defendant.

Plaintiff said he was a qualified dental surgeon and a licentiate of Edinburgh, having been in practice for 14 years. In October, 1886, he made some artificial teeth for Mrs. Strickland, and no complaint was ever made about them. In April, 1887, they were destroyed in a fire that occurred at Mr.

Strickland's premises, and on the 3rd of May he was again consulted about a set of teeth for Mrs. Strickland. On the 10th May he visited Mrs. Strickland and tried the denture, and on the 19th he fitted the teeth and left them in Mrs. Strickland's mouth. He heard no more about them until October, and then Miss Strickland called and asked him to make some alteration in the upper set, stating that her mother was suffering from sickness consequent upon wearing the teeth. Witness pointed out that the set could not require altering if Mrs. Strickland had worn them some months, and suggested that the sickness was due to ill-health. On examining the plate he found a deposit of tartar and other marks indicating that the set had been worn for some time. He stated a time for Mrs. Strickland to see him, but she did not keep the appointment. Afterwards he received a letter, and he wrote stating that he would call on Mrs. Strickland. He did so, and she was undoubtedly suffering from ill-health. On examining the lower denture he found on it a deposit of tartar, and he took it home with the top denture, cleansed them, and returned them again. He received no further complaint, and rendered his account in December, as usual. In February, the teeth were sent to him, with a note, repudiating any responsibility, whereupon he placed the matter in the hands of his solicitor. The teeth were thoroughly adapted to Mrs. Strickland's mouth, and the price charged was fair and reasonable.

Cross-examined by Mr. Richards : His two assistants helped him in preparing the teeth. In May, when he took the teeth to Mrs. Strickland, he said nothing about her persevering in respect of wearing them. He received no complaint from the 19th May until October. When he took the teeth away he cleansed them. Witness had no recollection of receiving a letter from Miss Strickland, dated 27th October, stating that "her mother was suffering from extreme weakness, owing to her not being able to take sufficient animal food ; she had been waiting for her teeth three months, and did not intend to wait any longer." [Mr. Taylor considered that as no notice had been given to plaintiff to produce the letter, it was an improper proceeding for the learned counsel to read it.] No application was made for witness to call on Mrs. Strickland before October, and when he then called she was wearing the teeth (produced).

Re-examined by Mr. Taylor : The only alteration effected in the teeth was caused by Mrs. Strickland wearing them. The deposit of tartar on them showed clearly that they had been worn.

William James Pocock, assistant to plaintiff, deposed that he removed the tartar from the teeth when they were returned in October.

Dr. O. R. Richmond said he attended Mrs. Strickland on several occasions between May and October last year, when she was suffering from dyspepsia, which would be likely to produce a feeling of sickness. She was still suffering from that complaint. She complained to witness that the teeth were too large, and he advised her to remove them for a time, but he did not examine them closely. He was absolutely impartial as between plaintiff and defendant.

On resuming, the Judge granted Mr. Richards permission to call his witnesses before addressing the jury.

Defendant said he remembered his wife having a set of teeth from Mr. Lucas, in 1886, and they were destroyed when his premises were burnt down in April, 1887. They were paid for, but they had to be altered several times before they fitted properly. In May last year, another set was ordered, but they were not fitted on the 19th of that month as stated by plaintiff.—[In reply to Mr. Taylor, Mr. Richards said Mrs. Stickland would not be called in consequence of ill-health].—Witness's daughter called on Mr. Lucas several times between May and October to make complaints. The teeth were not sent home till July. On the Saturday evening following the letter of the 27th October, plaintiff called and asked who wrote the letter, and Miss Strickland said she did from witness's dictation, and with her mother's approval.—[Mr. Taylor said if this kind of examination were continued he must ask permission to re-call Mr. Lucas, who would give an emphatic denial to the statements].—Witness denied that his wife wore the teeth for three months. She simply put them in her mouth when Dr. Richmond was there, and kept them there about five minutes. After his daughter wrote, plaintiff called and took the teeth away, but they were returned in two hours; his wife never wore them afterwards. In January this year, witness called in Mr. Hockley, dentist, and instructed him to make a set of teeth for his wife, which he did, and Mrs. Strickland had worn them ever since.

Cross-examined by Mr. Taylor, witness said he did not write to plaintiff, but his daughter called several times. The bill for the first set of teeth was £14 14s.

Mr. Taylor: How much did you claim from the fire insurance company?

Mr. Richards objected to this question, as the set referred to had nothing to do with the action.

Mr. Taylor said he wished to show the credibility of the witness. The learned counsel then began to read from what he said was a copy of the particulars of a claim on the fire insurance company, in which an item of £14 14s., for a set of teeth appeared.

Mr. Richards objected to the question; he was given to understand that the papers produced were in possession of defendant's solicitors who acted in the fire claim.

Mr. G. Clinch said that was not true.

Mr. Richards at once withdrew the imputation.

Witness said he did not consider the statement alluded to a claim, but merely particulars of the articles lost. He acknowledged that the amount was mentioned.

Mr. Taylor said the price of the first set of teeth was £10 10s. only, the balance being for professional attendance.

Witness said his wife paid the bill, he did not know the separate items, but he knew the total amount was £14 14s.

His Honour said he could not reconcile the two answers of the witness.

Cross-examination continued, witness said the letter written by his daughter was left at Mr. Lucas's residence by a lady; he kept a copy of the letter.

Fanny Strickland said a set of teeth was ordered on the 6th of May last, and sent home on the 19th of July; it was not true the teeth were sent home on the 19th May. Witness found that the top set were much too long and the bottom set did not fit at all. It was not true that her mother wore them for three months: she tried them several times, but did not keep them in longer than ten minutes. Witness called on Mr. Lucas several times, and wrote to him on the 27th October, Mrs. Durnford, a lady friend, taking the letter and the teeth to his residence. The teeth were sent back two hours afterwards, but there was no alteration whatever. On the Saturday evening Mr. Lucas called and said he thought he had made the teeth all right. They did not fit, however, and her mother had a set made at Mr. Hockley's.

Cross-examined by Mr. Taylor: Witness called several times on Mr. Lucas. When the teeth were taken home, after Mr. Lucas had had them, witness did not notice that they had been cleaned.

Mr. Edward Hockley, dentist, Gravesend, said that in January, 1888, he was called into the defendant's house to see a set of teeth. He applied them to Mrs. Strickland's mouth, and without taking an impression he saw the upper set was a palpable misfit, while the bottom set would not go in at all; the model was wrong. He made another set of teeth, which Mrs. Strickland had worn.

Cross-examined by Mr. Taylor: Witness was a surgeon-dentist. He was in competition with Mr. Lucas for the post of dentist of the Gravesend hospital, and lost the post by one vote.

Plaintiff, re-called, said he only recollected Miss Strickland calling on him once. He gave her an appointment for her mother, which was not kept. He had no recollection of receiving a letter of the purport of the one read by Mr. Richards.

Cross-examined by Mr. Richards: Plaintiff instructed his assistant to write a letter, in which he said he was very much surprised at the letter of the 28th October. However, he still adhered to his statement as to the calls of Miss Strickland.

Messrs. Richards and Taylor having addressed the jury on behalf of their respective clients, the Judge briefly summed up the evidence.

The jury, after a short consultation, and without retiring, gave a verdict for the plaintiff, for the amount claimed.

ANSWERS TO CORRESPONDENTS.

S. B. W.—We are not aware of any work bearing upon the subjects you name.

L.D.S.—This is a strictly personal matter and not interesting to the Profession at large and therefore not admisable in our pages.

AMALGAM.—Refer to the Dental Depots we are sure all their Depots are too honest to take advantage of your invention. We think either of them will purchase it or you could bring it out on your own responsibility; the outlay is very small and if successful will bring large profits.

BOOKS AND JOURNALS RECEIVED—

Dental Record.—L' Odontologie.—Southern Dental Journal.—British Medical Journal.—Transactions Odontological Society of Great Britain.—Independent Practitioner.—Odontographic Journal.—L' Art Dentaire.—Chemist and Druggist.—Pharmaceutical Journal.—Items of Interest.—Ohio State Journal of Dental Science.—American Journal of Dental Science.

British Journal of Dental Science.

No. 491. LONDON, JULY 2, 1888. Vol. XXXI.

FATAL CASE OF PYÆMIA, THE RESULT OF DENTAL CARIES: WITH REMARKS ON THE PROPHYLASIS OF THIS AFFECTION.

By Dr. H. L. Coopman, of Amsterdam.

Though fatal cases of pyæmia supervening on dental caries have been recorded on several occasions of late years, another case may well be worth publishing on account of its practical importance. For it is not solely a case of theoretical speculation, but also, or far more, of the practical consequences which unfortunately a large number of practical surgeons and dentists still refuse to admit. The patient's history is briefly as follows:

P. K., aged 8, the offspring of perfectly healthy parents, who exhibited not the slightest sign of any constitutional taint, was brought to me on December 10th by his father, with the history that for some days past the molar and submaxillary regions had been swollen. I looked into his mouth at once and examined his front and molar teeth; a permanent first lower molar was very much decayed, and I advised its immediate extraction. But the father would not hear of this under any conditions, and remarked that his medical man had always told him that no tooth should be extracted while the swelling lasted; I therefore merely ordered him a mouth-wash which I much regret having done now. To be on the safe side, I called in an experienced dentist who was of the same opinion as myself, but the father persisting in his refusal, he advised the application of poultices.

Three days afterwards I was called to the child and found him in the following state:

General prostration, temperature of 106°F., a history of shiverings, great fœtor of the breath, board-like infiltration of the jaw trismus. I again advised the parents to allow the tooth to be extracted under anæsthesia, but with the same result as before. Eight days later the child was again brought to me and the consulting dentist removed the tooth. Though a permanent molar, it was quite loose and was removed without any difficulty. A mass of caseous pus came away with it. A temporary improvement occurred, but the fever did not abate, and, moreover, all the other symptoms, with the exception of the trismus, persisted. Two days after, an abscess formed on the infraorbital margin, which, on being opened, gave vent to brown blood and matter; notwithstanding this last operation, the condition did not improve, and three days later the child died with all the symptoms of pyæmia.

To sum up, it appears most remarkable that the tooth, though a permanent one and at the very outside one year old, should have been quite loosened, which would point to a widely diffused purulent periostitis; secondly, that after the removal of the corpus delicti, no improvement of the condition should have occurred; thirdly, that an abscess should have formed on the lower border of the orbit, though all the upper teeth were perfectly sound. The explanation of the first point has been given already; I must add, however, that the alveolus was thoroughly cleansed both before and after the operation with sublimate lotion according to Witzel's advice. With regard to the second as well as the third points, *i.e.*, the meaning of the abscess, we may either look upon it as a simple metastasis resulting from the general pyæmic state, or as an extension (direct metastasis) from the lower part of the cheek.

The first assumption appears the more probable of the two, and for the following reasons: 1st. The abscess was opened twice without any effect, and secondly, to refer to what I have omitted to mention in the final symptoms, which pointed without doubt to meningitis of a purulent kind, namely strabismus, *cri hydrocephalique*, Trousseau's sign, very rapid and irregular pulse; so that one might easily look to the presence of multiple abscesses in different parts of the body. Unfortunately no post mortem was allowed.

If we turn for similar cases to medical literature, excluding historical cases and only referring to recent times, we need only mention the cases which Witzel refers to in his work on operations on the alveoli, and which are fully described in the Austro-Hungarian quarterly review of dental science. (*Œsterreich-ungarischen Vierteljahrschrift fur Zahuheilkundi.*)

In most of these cases the cause was necrosis of the lower jaw, due to neglected extraction of teeth. It would be very difficult to say whether necrosis had occurred in my case, for the examination with a probe as far as it was possible for me to go, revealed no exposed bone; the short duration of the disease would make such an assumption very doubtful; that osteomyelitis had set in is shown by the pain, the high temperature and the enormous swelling. Baume (*Manual of Dental Science. Vol.* 4.) also states that serious complications may follow ostitis and the supervening necrosis, and he records a case of von Pitha, described by Lanyi, of periostitis and necrosis, where healing occurred apparently after the extraction, and yet the patient succumbed a month later to pyothorax. He himself met with a similar case which he recorded in the German quarterly review of dentistry, 1876, (*Deutschen Vierteljahrschrift fur Zahnheilkunde,* 1876), and in which probably phthisis occurred as a sequel to a neglected caries of a tooth and carried away the patient.

Lastly, in the *Central Blatt fur die Gesammte Therapie,* Central Journal of General Therpeutics, Oct. 1887, Scheff, Junr. refers to a fatal case of alveolar abscess, in which death occurred through the entrance of pus into the cavernous sinus; but in all other respects it bore a striking similarity to my case.

A few words now about treatment. All modern surgeons and dentists are quite agreed that the principal point is the extraction of the offending tooth, but with this the whole matter is not at an end, and quite latterly the paper by Ad. Witzel has been the means of our making a great step in advance.

Baume wrote as late as in 1885: Further treatment, *i.e.,* after the extraction, is hardly necessary, and as a rule healing occurs without any subsequent trouble. If the ostitis has reached a more advanced step, further treatment may be called for after the extraction.

He goes on to recommend: Poultices, later tincture of iodine or ointment of iodide of potassium; to prevent the bursting of the abscess externally he recommends ointment of iodide of potassium; but he quite ignores treatment of the alveolus.

Witzel, on the other hand, with truth, draws the attention to the fact that all the rules of surgery should apply to the field of operation and that both before and after the operation all parts should be thoroughly cleansed.

In purulent periostitis, &c., he advises :

I. Antisepsis of the instrument (the inner surface of the bladeshould be polished, and the teeth of the forceps should be disinfected in alcohol.)

II. The part to be operated on should be cleansed with a brush and sublimate lotion.

III. After the operation, as soon as offensive pus begins to flow out of the cavity it is not enough to make the patient wash out his mouth, but care should be taken to thoroughly disinfect the cavity and to secure a proper outlet for the matter. Filling the cavity with iodoform gauge is not sufficient, but the hollow should be carefully plugged with sublimate wool.

By following these rules we shall seldom have to regret the loss of a patient from apparently so trifling an ailment, provided of course that the extraction is not postponed too long, as it was in my case.

ON DENTAL REFLEXES AND TROPHIC CHANGES.

By Edward T. Blake, M.D.

(Concluded from page 55[illegible].)

Case V.

Hysterical Amblyopia.

A typical example of this affection was narrated to me by Mr. John Couper, the well-known oculist.

A country girl was brought to Moorfields, asserting that she was totally blind in both eyes. No organic change was found to exist and she was suspected of malingering. Mr. Buller, the House Surgeon, suddenly displayed a frog before her eyes, when she started back shrieking with terror. Unlike the case narrated before, this young woman continued to assert that she was absolutely blind. She returned home declaring that she had been brutally treated at Moorfields. It is interesting, as a commentary on the guilibility of mankind, to find that her friends wrote to the managing committee of Moorfields, demanding the immediate dismissal of the House Surgeon!

I have heard of persons becoming permanently blind after the removal of a tooth, but I have no evidence of a reliable nature on this point.

CASE VI.

Phlyctenular Conjunctivitis and Diseased Teeth.

For the following details I am indebted to Mr. Henry Power. A youth was brought to him with phlyctenular ophthalmia. Without examining the mouth Mr. Power predicated that defective teeth existed. This was found to be the case, and within ten days after their removal the eye recovered.

CASE VII.

Squint and Decayed Teeth.

Gwendoline G., aged five, with white skin, black hair, and sadly carious teeth. Very disfiguring inward strabismus of left eye. So little serves to disturb the functions of the external recti. Late to be developed, early to go—something like the peronei in the leg—these muscles are frequently deficient and flabby. So unlike the active internal recti, supplied by the powerful third cranial nerve or motor oculi, and the sixth, the external recti are no match for their potent antagonists, and unlike their opponents these cannot act in concert; hence the frequency of strabismus convergens; hence the frequency of external asthenopia; hence, too, the unreasonableness of internal tenotomy. These cases were formerly viewed as spasm of the rectus internus, they are now recognised to be far more commonly a paresis of the external recti, due to degenerate muscle or to feeble innervation from the nerve centre.

I diagnosed reflex paresis of left abducens due to dental caries, *via* Meckel's ganglion, and directed the teeth to be thoroughly overhauled. I have just heard, two years after, that there has been a progressive improvement in the axis of the left eye since the removal and stopping of the erring teeth.

Mr. Henry Power has recorded some deeply interesting cases of ulcerated cornea occurring as a reflex from tooth disease. These cases may be analogous, as to their pathology, to the neurotic perforating ulcers of the extremities.

Other neuroses which should specially attract our attention to the state of the teeth are epilepsy, trismus and general tetanus, infantile convulsions and superior monoplegia, amaurosis and deafness.

Disorders of the upper teeth are said to induce by preference pains in the twigs which are derived from nerves passing through the supra-orbital or the infra-orbital foramina. Also pains in the orbit or in the side of the nose. Pains in the ear, the auriculo-temporal, or in the gustatory branches of the inferior maxillary suggests the lower teeth. The chorda tympani of course supplies the link between the gustatory and the facial, and thus introduces an enormous number of possible reflexes. Amongst these are Meckel, the otic, sympathetic on the middle meningeal, the glosso-pharyngeal, the vagus, the carotid plexus, the great auricular, and the upper two divisions of the fifth.

CASE VIII.

Pseudo-cerebral Disease from Wisdom Teeth.

Occasionally we meet with extremely bizarre groups of symptoms apparently cerebral. One of the most startling is the celebrated St. Leonard's case. A gentleman, aged about forty-six, suffered from severe headache, mental lassitude, and some most distressing subjective cerebral symptoms. Flashes of light seemed to dart through his brain. He was compelled to throw up his profession, and life became a burden. To the keen insight of Dr. Robert Cooper this gentleman owes his recovery of wonted health. The upper wisdoms were removed, and with them disappeared all the train of distressing symptoms.

CASE IX.

Urethral Catarrh as a Dental Reflex.

Urinary Tract.

It scarcely occurs to us to associate the urinary organs with the teeth. Yet John Hunter narrates the particulars of a case of purulent urethritis accompanying the appearance of a new tooth. We might feel inclined even in the face of so careful an observer to cry "*post hoc sed non propter*;" but Hunter records in this instance that the boy had an attack of "gonorrhœa," coinciding with the eruption of each tooth. We have already observed that defective teeth will induce symptoms resembling the results of gonorrhœal absorption. We know how prone the subjects of repeated attacks of urethral catarrh of an infectious character are to myalgia and to joint rheumatism. And when we see osteo-arthritis occurring in the young, especially if it be associated with acne of the chin, we shall usually find some chronic purulent absorption going on. We shall do well to hunt carefully for the site. Often there is a neglected gonorrhœa, or dental caries, ulceration of the rectum or an unsuspected fistula. Till the depôt of infection is discovered, little good will be done to the patient.

This brings us to the consideration of the last set of morbid changes induced by dental disease. The two following cases will show their alliance. They are examples of passive pyæmia complicated with slow septicæmia.

3.—Septic.

Case X.

Rheumatic Gout and Defective Teeth.

Henry V. is a tall, broad and well-built Government official, aged fifty. He lives in a well-drained house, on a high plateau of extremely dry gravel. He came to me with an old-standing rheumatic gout in the larger joints. Like my predecessors, I failed to afford him any marked relief. Feeling thoroughly dissatisfied with myself, I went over his physical condition again very carefully, and noted the extremely defective condition of this gentleman's teeth. I had these put into perfect order, and soon the osteo-arthritic troubles and the associated myalgia fell into abeyance. Four years have passed away : I frequently see this man, but never, Iam glad to say, professionally.

Case XI.

Scorbutic Gingivitis and General Myalgia.

Mademoiselle Clementine S., aged twenty-seven, resides at Lyons, consulted me on 27th of March, 1886, looking pale, feeble, and emaciated. Living in a large house where I knew the table to be liberal. I could not understand the cause of such extreme innutrition, till the odour from the mouth induced me to examine the teeth. I found the gums in a deplorable state, everywhere inflamed, spongy, with long crimson granulations suppurating freely, and the teeth themselves defective.

She wore a very well constructed plate, but the new teeth had been set on the old stumps. I believe it is an axiom in good dentistry that this should, if possible, be avoided. On inquiry I found this patient to be low in spirits, irritable, and often very hysterical; sleepy before meals, the muscles of the extremities ache, so that she with difficulty gets to sleep; wakes with a sudden start during the night (spinal anæmia), and as a result does not feel refreshed in the morning. Breaks abruptly into perspiration, grows giddy on stooping. Her head feels "muddled" and obscure. Has occasional throbbing in the forehead. Hair comes off and the scalp itches. The superficial cervical glands are large and tender. For three years has observed that the eyeballs are very prominent (thyroid not enlarged). There is a dragging sensation at the back of the eyeballs; the pupils are sluggish, they measure half a centimetre.

She cannot read more than five minutes without being compelled to close the eyes for rest; lachrymation in the sunlight. Post-nasal catarrh, granular pharynx. Poor appetite, extreme thirst; always nausea and "sinking;" upward flatus. For the past six months has had a pain in the left side of the abdomen over the site of the sigmoid flexure. For a year has had anal pruritus. Sometimes florid blood passes per anum. Is greatly troubled with vulvar pruritus during the night. Has had a pain at left apex and right anterior pulmonary base all the winter. Auscultation revealed a perfectly healthy lung. Palpitation during dorsal decubitus in bed. P. 90 at 10 A.M.

Always feels either too hot or too cold. During all the cold weather had a persistent pain in right renal region—an analysis of urine revealed a quite healthy state of the urinary tract; this pain proved to be myalgia of right quadratus. Herpes of left index finger. Pain in right hip. Both feet ache and swell. This patient improved under medicinal treatment, especially when having fractional doses of *corrosive sublimate.*

After each meal, I had the gums freely painted with *iodised phenol,* and washed well with hot solutions of *calendula* ʒii. to ℥j.

As the case was complicated with scurvy, I ordered plenty of oranges and soft salad, and very marked improvement was soon visible.

Flitwick water* in 10 drop doses appeared to give considerable help, but it was not till the diseased fangs were swept away in July that this patient really recovered. Since she has had her complete double set of teeth this lady has ailed nothing. She was literally poisoning every organ in her body by constantly inhaling putrescent particles with her breath, and by swallowing saliva always tainted with septic and with purulent materials.

My last example shows how defective dental supply may keep agoing a rash through the innutrition of the trophic nerve-centres which control the skin.

The next clinical study dovetails in well with the last cases, because here also osteo-arthritis set in during the absence of teeth, and disappeared with their renewal.

CASE XII.

Psoriasis: Rheumatic Gout; Entire Absence of Molar Teeth.

February 28th, 1887. Alexander R. is a sturdy, fair haired Scot, aged thirty. Has not felt quite well since he was twenty, but has been much worse since coming to London, fifteen months ago. No diathetic disease in his family. Vaccinated in infancy, re-vaccinated at fifteen. Is entirely covered with discrete spots of psoriasis, which show well on his white woman's skin. No coppery tint anywhere. These spots itch very much when the acids of the skin invade them, as after perspiration, which is very free on exertion. He talks in his sleep and awakes unrefreshed.

Latterly his spirits have been bad: he has been haunted by an indefinite sense of terror.

Formerly suffered much from cranial pains, not so much of late. Scalp is very scaly and itches. Ears dry and furfuraceous.

Skin of face used to be clear and ruddy; now it is pale and earthy. Foul and green yellow tongue on waking. Dry granular throat; he feels distended after meat meals. Sometimes offensive flatus escapes from the rectum. Gets a daily stool, but it is hard and lumpy. Sometimes is troubled with pruritus ani. Micturition too frequent. Palpitation after excitement and after exertion. Subject to stiff feeling in loins, and to rheumatic pains in the shoulders. Knees susceptible to cold.

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* A natural ferruginous spring in Bedfordshire, rich in iron, combined with organic acids from peat.

I began his treatment with *calcium sulphide* for one month, with the idea of neutralising some of the deleterious medication to which he had been unhappily exposed.

He afterwards improved much under ordinary sulphur. He was cured by new molar teeth.

We may look upon this as a suggestive case. He had been treated with copious *arsenic* and *steel* and many other powerful remedies, with the result of losing his teeth and his health, and retaining the rash for which these drugs had been administered.

And now may I be forgiven if a word is said about the care of the teeth? They *may* be cleaned in the morning, they *must* be cleaned at night. A moderately soft brush, some good germicide tooth-powder, but above all *warm* water. If the teeth be properly cleansed it would seem impossible for tartar to accumulate.* Its undisturbed accumulation is of course a sure way of losing the lower incisors. Especial attention should always be given to the posterior aspects of the lower front teeth. It is well to warn the patient not so much to cleanse the teeth as to patiently and conscientiously clean *each tooth*. He should be urged to respect his teeth, and to view each one of them as a gem of priceless value.

Finally, gentleman, let me say that, in spite of all that has passed, I cannot deny that not only do a great number of individuals at both of the extremes of life enjoy perfect health with no teeth at all, but adults who live all day long in the open air will both digest food and be robust without one sound tooth in the head.

WE notice that Dr. Theodore Stack, of Dublin, has been elected on the Council of the Royal College of Surgoons in Ireland. Dr. Stack is a prominent member of the Irish Branch of the British Dental Association, and his election is an encouragement to the Branch and a well deserved compliment to the profession in general. Dr. Stack is one of the successful candidates at the recent L.D.S. Eng. Exam.

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* But every quarter-day a visit should be paid to the dentist to see if the teeth need scaling, or if any unsuspected decay needs attention.

AN ADDRESS ON CONGENITAL DEFORMITIES OF THE MOUTH AND FACE.*

BY ROSWELL PARK, A. M., M. D. Professor of Surgery in the Medical Department of the University of Buffalo.

MR. PRESIDENT AND GENTLEMEN :—

I fully appreciate the honour that your committee conferred upon me when they invited me to address you to-night. In casting about for a subject, it occurred to me that the time could not be more profitably spent than in a consideration of Congenital Deformities of the Mouth and Face. Some of these are common, others you may never see. If you are not already familiar with the method of operating on those that you do see, it is well that you should know how they may be treated ; and of those that you seldom or never see, there are many that are very peculiar and interesting.

What I am about to say to you on this subject has so much to do with the embryology and early formation of these parts, that I propose for a moment to review the formation of the face. I want to call your attention to the downward projection, which is the so-called naso-frontal process, and to these comparatively smaller points which are the superior maxillary processes from which are developed, a little later, the superior maxillæ. These grow from their present lateral position and unite with the naso-frontal process, which is necessary to the formation of the upper jaw. The second projections are the so-called inferior maxillary processes, which also meet in the middle line and form the lower jaw. This, the second post-oral process, is interesting to us, for from this is developed the upper part of the hyoid bone.

Let us turn to the same ovum three weeks later, at the end of the sixth week. All the anterior parts of the skull, that is, the portion in conjunction with the brain, the eyes and their sacs, are developed more, and the naso-frontal process now has quite an identity of its own. The superior maxillary process has extended further toward the middle line from its rudimentary position. On the side is the so-called lateral mass, that comes down from the frontal and ethmoid bones and unites with the naso-frontal process to form the nose, and with the superior maxillary process to help form the upper jaw and the lateral walls of the nose. In the middle is the rudimentary tongue, which has a size disproportionate to the rest of the upper part of the embryo. The completed lower jaw, sometimes called the mandibular arch, is now plainly seen.

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* Delivered Oct. 25, 1887, Before the Seventh and Eighth District Dental Societies of the State of New York, and Reported in the Independent Practitioner.

At the third week it has advanced pretty close to the middle line, but has not yet united across that line, while at the sixth week it has united. If you bear in mind these facts, it will very clearly explain those more common defects, such as hare-lip and cleft-palate, and will also account for these exceedingly rare and excessively horrible deformities which are sometimes seen across the whole face. Fortunately, infants having such deformities usually die soon after birth; sometimes, however, they grow up.

CLEFTS.

The most common clefts are cleft-palate and hare-lip. We cannot well understand the formation of cleft-palate without bearing in mind the development of the part. The inter-maxillary bone is developed in some of the lower animals, and in some of them never completely unites—that is, it never fuses with the adjoining superior maxillary bone. A line of suture always exists between these bones, such as is found between the various bones of the cranium, but in the human being this suture can be found only before the twenty-fifth week, after which it disappears. But occasionally this line of union between the intermaxillary bone—or, as it is called by some, the incisive bone—and the superior maxillary does not take place, and then we have a fissure which may be either unilateral or bilateral, and in that case we have a single or double cleft-palate. This intermaxillary bone is a result of the fusion of the naso-frontal and the superior maxillary processes. The main part of it is developed downward from the naso-frontal process, and when it fails to unite with the superior maxillary process, we have the cleft.

Of these forms of cleft-palate there may be several varieties:—

(1.) The double cleft, which extends backward on each side of the middle line.

(2.) A common cleft running through the hard and the soft palate, in which case the uvula is generally thrown to one side and may not be recognizable.

(3.) A single lateral cleft, extending entirely through.

(4.) A cleft which does not involve the alveolar process or gum.

(5.) One in which the cleft extends only part way through the hard palate, coming up within say three-quarters of an inch of the alveolar border.

(6.) A small cleft of the uvula alone. This is the mildest of all, and is remedied by the simplest possible surgical procedure.

The conditions of which I propose to speak to you to-night are amenable to surgery only, and cannot be cured in any other way, though you may palliate them with apparatus which you well know how to devise. When the intermaxillary bone projects very far forward, it makes a doubly disgusting deformity. Here is a projection, apparently from the nose; that is, the growth is attached to the septum, and is almost on a level with the tip of the nose. It is hard enough to close the fissure at best, but when the case is complicated with this unwelcome mass, one hardly knows what to do. There are three ways of getting at such a projection as this; one is to force it back and try to maintain it there by sutures. In mild cases this may be done. The second way is something like this. Virtually, we have the septum of the nose carrying the intermaxillary bones forward; with cutting forceps a V-shaped piece is taken completely out, then seizing this mass firmly, it may be crowded back to its place and so held that it will adhere for life, if there be sufficient vascular supply; otherwise it will gangrene and drop off. The next thing to do, the last resort, is entirely to excise it and bring the parts together without reference to it.

These cases of cleft palate are too often complicated with hare-lip, and the question arises—What shall be done for the child; when shall we operate, and how much shall we do? Let me say this to you; when a case is complicated with hare-lip, attend to that first. It is astonishing how much can be done by gentle prolonged pressure. If you do nothing else than unite that labial fissure, you will then get the pressure of the lips. For one moment or one hour, that amounts to very little, but when it is kept up for month after month and year after year, it does a great deal; not in bringing the sides of the jaw together, so much as in preventing the face bones from separating as they grow to adult size, so that it is always worth while to operate on hare-lip early. How early? I have operated within two or three weeks of birth, and I know one surgeon who claims to have operated on a child on the sixth day from birth. There is not quite such hurry as that, but I would advise you to operate within two or three months, unless the child is sickly and not likely to live. If it is in the hottest weather and there bids fair to be marasmic trouble, and the child is already delicate, you may say that it will not pay to torture the infant, which will die at all events.

One needs so much room for staphylorraphy that it is usual to wait till the child is five or six years old, operating immediately on the hare-lip, and feeling quite sure that the fissure will not widen any if it does not actually approximate. Quite recently, however, the Germans are advocating early operation for cleft-palate.

You may have simple hare-lip, uncomplicated by any fissure in the palate or alveolar border at all. Practically, if the cleft exists, it is almost always on one side or the other of the median line; it is very rare in the middle line. You may have single or double hare-lip. Garretson's Oral Surgery, which I suppose you all have, gives full descriptions of methods, and it is unnecessary for me to recapitulate them. I do not, however, always use hare-lip pins, and, for that matter, my method of operating differs a little from the classical method, but not so much so as to make it important to say anything about it. It is always advisable in operating on hare-lip to pare your fissures and get fresh edges, but not to cast away any integument until you find that you cannot utilize it. When the two edges are brought together, you will, perhaps, find that you greatly need the little part of skin, and if it had been cut completely off it would have been a mistake, for it can often be used to complete the continuity of the upper lip.

The question is sometimes raised as to the benefit of operations on cleft-palate with respect to articulation and deglutition. Many a patient is willing to go through life with a cleft-palate, because it does not show unless he or she opens the mouth, provided they cannot be assured that the speech is to be improved. You all know the excessively disagreeable nasal twang which this fissure causes, and it is a very important thing to know whether we can promise a person that he can speak better. Such patients will put up with the disgusting dropping of mucous into the mouth, and the discomfort of food passing up into the nose, if they cannot be assured that their articulation will be bettered by an operation. A child six years of age will not have learned to talk very much by that time, and if you operate on it early, the probability is that you will effect a great improvement by the time it is ten or twelve; but if the patient waits till he is twenty or thirty, and then undergoes an operation with the hope of improving his speech, both patient and operator will probably be disappointed; so it is always enough for me to operate in in such cases for the sake of correcting the disgusting droping of mucus and the inconvenience of deglutition, and not on account of the improvement of speech.

ATRESIÆ.

Such a thing as absolute closure of the nostrils has been met with, but it is rare. One or two cases are on record in which the nose has been occluded by bony union, so that it has been necessary to go through the obstruction with a bone drill. Membranous atresia is not so rare, though still uncommon. Sometimes the membrane is thick and tough, sometimes the merest film. Another deformity is that the nostrils are congenitally small. One sees complete closure of the nostrils, anteriorly, as the result of disease, as from cicatricial contraction, the result of syphilitic ulceration, and I have seen similar cases from diphtheritic lesions, but such cases are quite uncommon, and this congenital narrowing is still rarer.

Three cases of congenital narrowing of the posterior nares have been reported in Ziemssen's Cyclopedia. Closure of the posterior nares by diphtheritic or syphilitic processes is by no means uncommon. I have a woman at the hospital to-day, under my care, whose pharynx is almost cut off from the mouth by superficial ulceration, which has drawn down the palate so that there is almost no communication between the mouth and the pharynx proper. I have seen a similar case in a boy suffering with hereditary syphilis.

FISSURES AND DEFICIENCIES OF THE NOSE AND MOUTH.

Complete absence of the nose has been noticed in an infant at birth, and once in a while these patients have grown up and the absence of the nose has had to be atoned for by some mechanism, or by a plastic operation. When the nose is entirely absent, it is better to make some artificial contrivance rather than to perform the plastic operation.

Operations for fissures on one side of the nose and mouth have been made.

So, too, lateral failure has been noted on one side of the face. A fissure extending from the mouth laterally, corresponds to a failure of closure between the superior and the inferior maxillary arches and the soft parts which cover them. It is very easy to explain if you refer back to the embryological development of these parts, but unless you do, it is a miracle.

The worst case of which I have any knowledge was that of a child which fortunately died when it was three days old. This case presents a variety of fissures. There is almost complete absence of the palate. The tongue is rudimentary, and strange to say there is a bridge extending from the ordinary skin of the cheek up toward the superior maxillary bone, which there is no explaining, so we must call it an accident. But the whole thing, disgusting and unpleasant as it is, may be explained, with the exception mentioned, by reference to the embryology of the face and head. There are such things as double lateral fissures, occurring on both sides. The natural result of such deformity is to extend the mouth and make it spread, literally, across the face. That is one form of the deformity known as macro-stoma, which simply means large mouth. On the other hand we have the condition known as micro-stoma, which is a congenitally small mouth.

Median fissures of the face, affecting the upper jaw, are comparatively common ; those of the lower jaw are uncommon ; only three cases of median fissure of the lower jaw, tongue and hyoid bone, have been met with. Such defects in milder form are known, as, for example, when there is a false joint in the middle of the lower jaw, or no union at all, or splitting of the tongue, which, as you know, is the natural condition for serpents and some other reptiles. There are one or two cases on record in which the tongue has been divided into three parts instead of into halves.

Taking up for a moment atresia of these parts, there are cases on record of complete fixation of the tongue to the floor of the mouth. Much more frequent are partial illustrations of the same in tongue-tie, in which the frænum is too short. Simple splitting of that is enough. Don't be frightened by the statement made in some books that there is an artery in the frænum, and that the patient may bleed to death. Such a thing might occur, but there is very little danger of it. But there is danger of doing too much in this operation, for in some patients, who have already a long tongue, there might occur what is called "swallowing the tongue." One might imagine this an impossibility, but the tongue may be so long that it may get down into the throat and choke the patient. Cases of persons who could really swallow their own tongues have been exhibited. There are also instances of extreme elasticity and flexibility of the tongue, with unusual length. There was one man who could stand perfectly erect and put the tip of his tongue down to his chest, although it did not, in the mouth, appear abnormally long. That is, in one sense, of course, a deformity. In another case the jaws had grown together simply by an adhesion of the gums, and not by a bony anchylosis.

Another case of extreme embryological interest, which is, so far as I know, unexplained and very rare, illustrates the projection of the intermaxillary bones, but here are two marks representing fistulæ of the lower lower lip. There is nothing corresponding to it in the lower animals, or in the embryo, and this is an exception to a law which is something like this—that no matter what the deformity in the human species, you will find its analogue, either in the embryological life of the human fœtus, or in the lower animals. But I know of no analogue of this. Sometimes the fistula leads down from one and a half to two centimeters, and is simply a blind opening. Sometimes there are two fistulæ which converge, and sometimes they diverge. They seem to have no function whatever, and lead nowhere. Such a condition is easily remedied ; it is the embryological interest it has which makes me allude to it.

CONGENITAL DEFICIENCY IN THE SIZE OF THE LOWER JAW.

There are cases on record in which the lower jaw does not match the upper jaw at all. These are usually accompaniments of fissures of the cheek and lips and other abnormalities. Langenbeck reported a case in which he could pass his hand into the child's mouth and feel that the ascending ramus was entirely absent, and then he could pass his finger up in the proper direction and feel the glenoid cavity of the temporal bone, and assure himself that it was empty. These deficient lower jaws usually have too few teeth.

Complete absence of the tongue is sometimes noticed. The most remarkable case on record is that reported by a French surgeon, some time ago. The tongue is sometimes found to be too small, and this results from a failure of the original tubercle, which represented the tongue, to develope properly. Then there is the so-called micro-glossus, which is simply the Greek word for small tongue, and, on the other hand, you and I will occasionally see a child whose tongue is too large for its mouth. Some of these patients cannot bring the teeth together without great effort, and these cases are always accompanied by tooth-marks on the sides of the tongue. That may be a congenital deformity, or it may arise in connection with the kind of tumour which we call lymphangeioma. You might call it elephantiasis of the tongue, for it is to the tongue what elephantiasis is to the skin of the limbs. The forms of macro-glossus are amenable to treatment, but micro-glossus is not. It is not possible to expand the tongue, though you may make it smaller by cutting out a piece, or by causing it to contract by the application of the cautery.

There is another disease known as macro-cheilia, which means large lip. One occasionally sees an immense overhanging upper lip, or an underhanging lower lip. This may be a congenital trouble, or it may be acquired. The case represented is one of macro-cheilia, due to a venous tumour in the lip. It is a condition similar to macro-glossus—a kind of elephantiasis of the lip. Of course, as much of that as may be necessary may be cut away. One sees these venous tumours of the lip, beginning as a "mother's mark" or "strawberry mark," so-called, and if attended to early, they may be perfectly cured, but if put off, they may grow very large.

This same form of venous tumour may occur in the inside of the mouth. I have recently had under treatment and, I think, cured, a lady who had something of this kind in the inside of the mouth, spreading on the ramus of the jaw and down to the fauces. The remedy in her case was electrolysis. I also cured a young man in this city, of a corresponding condition, only worse, where the lower lip, upper lip and cheek were covered with such a tumour. I employed in this case a mixture of electrolysis and ligation.

Of the other tumours which are congenital in origin, let me refer to the papilloma, or warty growth. I have recently removed part of the tongue from a child which, when born, had a tumour on the front of his tongue; when presented to me the tongue was protruding from the mouth like a fist. It could not eat, could not drink, and could hardly nurse. I have also seen a child, the interior of whose mouth was covered with at least two hundred of these small papillomata.

Then the form of cystic tumour which comes underneath the tongue, known as ranula, may, sometimes, be of congenital origin, though this is in many cases an illustration of the formation of a cyst by occlusion. There is one form in which the duct is perfectly patulous, but which consists of a dilatation of the gland structure proper. The best treatment is complete excision of the cyst.

The so-called dermoid tumours are growths of no small interest. They are cysts containing more or less fluid, but they contain also such things as teeth and hair, and irregularly developed fragments of bone, and even other parts which grow from the external layer of the blastoderm, and they may be found in the mouth as well as anywhere else. A very interesting case of cystic tumour was reported in the *Independent Practitioner* a few months ago, and that is the best illustration I have seen. (See Vol. VIII, page 295.)

There are dentigerous cysts connected with abnormally developed, or, usually, misplaced teeth. You will find a tumour projecting into the mouth or against the cheek, which is hard, yet which seems to fluctuate; the cyst is opened into and you find a little fluid and a tooth. It may be that the tooth started too far down and could not grow up into the light; or it may be that the tooth started in the right position, but grew down or laterally instead of upward, or it may be that the root was not properly developed, and so the tooth was not pushed out into its proper place.

Lastly, I desire to speak of a class of tumours which may be found about the jaw, as well as anywhere else, which offer to pathologists the highest degree of interest, which are rare, and yet, as curiosities, ought to be mentioned to you to-night. They are the Teratomata. The tumours are connected with monstrosities. I desire to draw a distinction between dermoid cysts and teratomata. In the dermoid cysts you simply find such structures as are developed from the external layer of the blastoderm; in teratomata you find parts which must have developed from two, or all three of the blastodermic layers. In the dermoid cyst you may find a calcified plate, which may easily have come from calcification of a piece of skin. In the teratomata, however, if you find a complete jaw or half a complete jaw, or other parts of a fœtus, it is a different matter. A case was reported some time since of a child who presented a large tumour on the face. On its removal and dissection there were found more or less complete parts of, apparently, a twin child. That did not mean twin pregnancy—it was an example of these rare growths, the teratomata.

Meyer reported, not long ago, a case in which a tumour was found growing on the lower jaw and on the side of the neck, and on its removal a complete lower jaw was found within it. You cannot have a complete lower jaw in a dermoid cyst; it was, therefore, a teratoma.

I have hurried over these points as briefly as I could, to-night, and while there is much else that I should like to say to you concerning these matters, I will simply confine myself to one further abnormality, which does not exactly concern the mouth, but which comes up in connection with what has already been said. I refer to the branchial cysts. You see between each of these arches a dark line representing a cleft. The arches start separately from each other, and later are drawn together, while the interval between them should be entirely closed. These fissures, by the way, are called branchial clefts or fissures, because they correspond to the branchiæ or gills of fishes, being to the human fœtus what the gills are to fishes. When they fail to close in a proper manner, they almost give rise to cystic tumours. Such tumours extend, and, to a certain extent, migrate. Thus it may happen that one may be found extending from near the ear almost to the shoulder. These cysts are rare, and it is only within the last few years that their pathology has been made out, but it has fallen to my lot to see at least two of these rare cases, and in each the tumour—having been shut off probably before the child was born, at any rate long before I saw either of them—extended down beneath the superficial fascia, from the ear to the chest. In one case, that of a young lady, it extended from the ear to below the mammary gland; from the middle line in front to the posterior axillary line behind, and fluctuated under the clavicle. The other case was that of a young boy in this city, from whom another surgeon had removed the part of the tumour above the clavicle, but had apparently been a little timid and had not removed the rest. When I saw the lad, two or three years after the operation, there was a fluctuating bag below the clavicle reaching far downwards in the axillary and pectoral regions. It took a great deal of careful dissection to remove this, but it was done and I have the specimen yet, as a complete unbroken sac.

I have, perhaps, presented some things which you may think do not primarily concern you, but I know that you, as members of the great medical profession, are anxious to know something of matters outside of your own legitimate field.

SALIVARY FISTULA CURED BY THE GALVANO-CAUTERY.

In the *Glasgow Med. Jour.*, Professor George Buchanan records an example of salivary fistula cured by the galvano-cautery. A lady suffered from an enormous carbuncle situated on the left side of the neck, below the ear, extending to the cheek over the parotid gland. A free incision was made, and the parts almost completely cicatrized, but below the lobule of the ear a little sinus remained, from which a small quantity of semi-purulent watery fluid exuded. For thirteen years the patient had nothing done; every time mastication was performed some drops of saliva issued from the fistula below the ear. The author saw her in October, 1859, and recommended cauterization of the mouth of the fistula. A platinum wire loop was shortened and pressed together, so that the two sides of the loop were in contact, and together were not thicker than a small probe. The wire was placed on the exact spot of the fistula before it was heated, and held firmly there while heated by the electric current. An eschar, the size of two pins' heads, was produced by the wire, and a fortnight later the sinus was perfectly healed.

British Journal of Dental Science.

LONDON, JULY 2nd, 1888.

ARE HOSPITALS AN UNMIXED BLESSING?

THE immense increase in the numbers of our urban population has led to a corresponding growth of the Hospital and Provident Dispensary system. While large centres of industry and rapidly-growing suburbs demand increased hospital accommodation, it is deplorable that the want so painfully felt should be so inadequately and so unwisely met, as it undoubtedly is in many cases. The specialisation of hospitals, unless it is most narrowly watched and most judiciously guarded, is apt to lead to many grave abuses and much self-seeking among the promoters. In dental hospitals we have special hospitals which are from their peculiar circumstances less open to adverse criticism than other charities, but even these share with all hospitals both general and special, one great evil, and that is the facility they offer, to fraudulent persons for obtaining advice and treatment gratis when they are well able to afford fees. In all professions there are, and must of necessity be many grades of practitioners, of no body of men is this more true than of dentists; the modes of practice as one travels east, north, and south, vary widely from those of Hanover Square, Cavendish Square, Burlington Street; just as the clientele is drawn from a lower stratum of society, so is the dentist himself compelled to suit his fees and his materials to the exigencies of his position. It then becomes a great hardship for these men who devote their life to one of the most arduous callings that can be adopted, to find their patients attracted to the hospitals, never to return.

It is, of course, true that the hospital authorities might urge that upon the principle of the survival of the fittest, the patients will not leave good dentists to encounter the inconvenience inherent upon attendance at a hospital, unless they get better work done. This contention is not of any great weight, for however skilful a practitioner may be he cannot devote the time and pains to each case, nor afford the more costly materials if he has to make a living out of small fees. The hospital staff is composed of picked men, who would, of course, resent the small fees of east end practices, and yet, as the patients know well enough, they supervise all the work done and in many instances actually put in gold and other fillings, performing work which the struggling dentist could not possibly attempt. It is confessedly difficult to organise a scrutiny into the circumstances of persons applying for relief at hospitals, and so the difficulty is eluded in most instances by no manner of heed being taken who is allowed to attend and who is rejected.

One of the greatest evils called into being by the multiplication of hospitals is the keen competition which is excited between them, and the rivalry called forth which induces one to pit itself against another, and to run up its lists of operations performed, and patients treated. Frequently this competition is so keen that little thought is bestowed upon the class of persons who are attracted, or the claims which they may or may not possess upon the charities of the institution. Unfortunately, among the evils which were associated with pay wards at hospitals, and self-supporting dispensaries is one which is daily increasing and becoming more and more prejudicial to the poorer practitioners alike of dentistry and medicine. This is the familiarity which pay patients get with hospital visiting. Whereas, formerly, a large class of persons thought it wholly derogatory for them to seek the assistance of a hospital, they at present have learned to think that because they contribute some trifling sum to the expenses of the hospitals to which they have resorted for advice, they have fully given an equivalent for what benefit they get and that they are simply carrying on a commercial transaction and are in short paying for the work done, and so are under no manner of obligation. This unfortunate state of affairs now is felt even at the Dental Hospitals for although no actual cash payment is made except for the cost of material used, yet the public does not discriminate between one hospital and another, once they learnt to regard hospitals as fit and proper places for the well-to-do classes, those who are euphemistically said to be "not too well off." The mischief is done, the ice is broken and no hesitation is felt about encroaching upon charities the primary objects of which are the relief and help of the necessitous. Much of this evil may be prevented by a more strict supervision of the persons applying for relief, and among other measures it might be as well to publish intimations to subscribers and governors that owing to the frauds practised by the well-to-do, the letters of admission to the hospitals, will be forfeited if the claimant fails to show that he is indeed necessitous, and an object of charity. The evil is growing, and the injuries done to dentists in small practice are felt and keenly resented, surely it were wise to adopt some measures to stem the tide of discontent and remedy what are *bona-fide* grievances. To prevent resort being had to advertising and other derogatory practices we must look to, and if possible, improve the condition of the lower strata of the profession, and remedy evils such as those to which we have drawn attention.

THE ANNUAL GENERAL MEETING OF THE B.D.A.—Preparations for this meeting which is to be held in Dublin, are being carried on with energy by the executive of the Irish Branch. The Royal University has granted the use of its hall for the banquet and the city Constabulary has offered its band to assist the harmony of the meetings. We understand very great care is being bestowed upon the Museum, which, if specimens arrive in sufficient numbers, will be a great centre of attraction.

TO CLEANSE THE HANDS AFTER THE WORKSHOP.—Dr. M. Vogel, writing upon the subjects of cleansing the hands, says that he has noticed that coppersmiths, tinsmiths, etc., whose hands become covered with a dirt from working in oxides and acids that cannot be removed by ordinary means, first rub them with warm oil, and when this has thoroughly penetrated, rub them with powdered borax. Subsequent washing with soap and water makes the hands perfectly clean. He advises those who have to use carbolic acid to go through the process above described first, and claims that in this way, (1) disinfection is made more thorough ; (2) the hands are made purer than it is possible to make them with soap alone ; (3) the hands remain soft and free from troublesome, rough epidermic scales, and the odour of carbolic acid is destroyed ; (4) the uncomfortable anæsthesia after washing with carbolic acid is avoided.

NANSOOK MUSLIN AS AN ABSORBENT is according to *Items of Interest* but to be used to be appreciated. It should be of fine quality, quite thin and soft. Tear it in pieces of about 4 by 6 inches. Place dozens of them within easy reach in a drawer. They are very nice to dry a cavity of a tooth, and answer many other purposes. With them there is no further need of spunk or bibulous paper. The more times they are washed and ironed (of course, without starching) the better they are, till quite worn out.

A NEW LOCAL ANÆSTHETIC.—According to the *Wiener Medicinischen Blatter*, Dr. Lewin describes a new local anæsthetic of surprising power and rapidity, viz., hayah or erythroflein. Its intensity, is *uberraschend*, and it is destined not merely to supplant but to quite overthrow and destroy the reputation of cocaine. It is of African origin, and is found in the shape of a red mass called *hayah*. A minute portion placed upon the tongue renders the organ utterly devoid of the sense of taste or even of sensation. Chemically it is a glucoside. A drop or two of an aqueous solution placed in the eye of a cat renders the organ absolutely insensible in fifteen or twenty minutes, and it is more or less anæsthetized from ten to twenty-four hours afterwards. Intravenously or subcutaneously injected, it renders frogs and such animals inert, the frequency of heart-beat is lessened from thirtyeight down to eight beats per minute, and a spasm or cramp, beginning at the eyes, passes over the entire body every few moments, extending to the very end of the tail, In animals that vomit, this reflex occurs within a few moments after injection. The source of this wonderful medicament is said to be a plant described by Oertel in the early part of this century under the name of *Erythrofleum judiciale*, the substance being used in the native African trials by ordeal. In these trials the bark of the plant is powdered and mixed with water, and given to the accused to drink. If vomiting follow immediately, the accused is held to be guiltless ; but if he fail to vomit, the contrary is held, and he is immediately stoned or clubbed to death. The Berlin Museum possesses the material originally sent to it by Oertel, and recent experiments with it develop the fact that the material now sent from Africa under the name "hayah" is an extract of the same, and the active principle obtained from both is identical. We await further developments with great interest.

WHO WAS THAT MAN?—Dr. Peete relates the following incident in the *Archives* : "This man came to me," he said, "with a severe pain in one of his lower jaw teeth, which was somewhat decayed. I told him, *of course*, the nerve of the tooth must be destroyed, the first thing. I took a vial containing, perhaps, an ounce and a half of nitric acid, and ordered the patient to keep perfectly quiet, while I poured a drop of the acid into the cavity. I had confidence in my steadiness of hand, and knew that I could pour out a single drop without any difficulty. Just as I had the neck of the bottle close enough to the tooth, the man made a sudden movement, and at least an ounce of acid was spilled in his mouth. But I seldom lose presence of mind, and promptly seized a handful of carbonate of potash and crammed it into his mouth. No material damage was done, and the tooth has never ached since." One feels that faith is not dead in the world when such a simple narrative as the above is told and presumably believed by someone, only we are not that someone.

MAD DENTISTS.—It is not a little singular to reflect that many people are afflicted with mental disease—in other words, with madness, in one form or another—who continue for a long time to conduct their affairs, or carry on their business, without anything, save perhaps a touch of eccentricity in their manners, distinguishing them from the completely sane, until, at a given moment the frontier between madness and sanity is suddenly passed, and the truth as to their condition becomes evident. It is not pleasant to think of the amount of danger patients ran who had their teeth troubles attended to by a couple of Italian dentists who have been practising for some time past in Paris, and who successively from being merely a trifle eccentric in their habits, have gone so mad as to necessitate their being shut up in an asylum. The first case occurred some weeks ago. The second, more recent, is that of a M. ——, whose mental condition was accidently found out in a rather curious way. A policeman, on duty near one of the bridges that span the Seine, noticed on several nights, a bundle lying on the ground, which, when opened was found to contain a sou, a postage stamp, some cough lozenges, and several of Gambetta's speeches—these articles being carefully wrapped up in a pair of new trousers. One night the mysterious bundle contained beside a card bearing the Italian dentist's name and address, and this indication enabled the policeman to deliver the thing to their owner. The dentist, however, indignantly declined to receive them ; he was caught the next night, and the next, depositing his bundle in the same place, and thus it came to pass that the poor fellow was taken up and found to be quite mad.

PYÆMIA OF DENTAL ORIGIN.—At a recent meeting of the Royal Academy of Medicine in Ireland Dr. A. W. Baker communicated a case of pyæmia of dental origin.—Dr. Little said he believed physicians and surgeons in ordinary practice were not sufficiently alive to the possibility of various troubles—neuralgic, cerebral, and gastric—resulting from infection coming from the teeth. He had seen three cases of the kind within the last three or four years. One was that of a young man whom he found suffering from acute phthisis, and he only lived a short time. At first his relations had no thought that there was anything seriously wrong with him, because he only had a bad tooth ; but inflammation began at the root of the tooth, and as the young man became worse he (Dr. Little) was sent for. He found that he had a large cavity in one lung, and the case ended fatally.—Dr. Baker, in reply, said he had never seen any case in which phthisis could be traced to alveolar inflammation.

COHESIVE GOLD AND HAND-BURNISHERS.—Dr. Morsman, writing in *Cosmos*, says : "Apropos of the talk about the Herbst method, while all have admitted that gold can be worked by burnishing, no one seems to have tried to any extent hand-instruments for this purpose. Gold works most beautifully under hand-burnishers. I use ball-point instruments of different size and angle of shank, and use round burs in preparing the cavity, so that the burnisher is adapted to its walls. One or two retaining-points should be made, and the gold used *without* annealing, except for surfacing, when hardness is desirable. No special gold is necessary. I have tried Wolrab's, but do not see any advantage in it, I am using the Globe semi-cohesive foil in the form of cylinders (Packe's) and as folded ribbons. I tried the Herbst method by rotary burnishing, and satisfied myself of two things,—that gold fillings could be made by it, and that the engine was a nuisance. I am decidedly opposed to any method of manipulating gold that necessitates an engine accompaniment.

I want more liberty of movement, and don't believe in sacrificing tooth-substance to method.

THE ETHICS OF THE MEDICAL PROFESSION.—"Usually the clergy do not comprehend the ethics of the medical profession better than the laity. Generally, the publication of religious as well as secular journals approve of the quack and condemn the honest, regular practitioner. Of the golden rule, as applied to medical men in their professional work, the clergy are, as a rule, utterly ignorant. But a writer in *The Wesleyan Christian Advocate*, while discussing "Ministerial Quackery," makes the following remarks about the medical profession. It will be the more appreciated because of its rarity. It is the first ray of that rising sun which shall one day illuminate the entire world respecting the ethics of medical men :— "It is a noteworthy fact that the medical profession has, more perfectly than any other, maintained its high and pure standard of excellency, and all the time made steady and substantial progress. There is something significant in this when we remember that this profession has kept its face against all forms of quackery. It recognizes as a great truth that the interests of humanity demand that a physician and his work should be estimated solely by their real worth. The man who advertises his excellencies, or has himself thus advertised, is suspected at once as being shallow, if not fraudulent, and being conscious of his deficiencies and his inability to pass on his real merit, he resorts to the newspaper as a means to catch patronage from light heads and the unthinking. The code of ethics of this profession is steadily against all humbuggery, and we note with pleasure that meekness and modesty has not yet been retired from the code. We readily see that a man in this profession is thus kept upon that high plane where his eye is ever fixed upon an ideal that is pure and elevated, and worthy of a man." The above remarks of the *American Lancet* are well worthy of a very careful perusal.

Abstracts of British & Foreign Journals.

WESTERN DENTAL JOURNAL.

PORCELAIN SETTINGS FOR CAVITIES ON THE VISIBLE FACES OF THE TEETH.

By A. H. THOMPSON, D.D.S., Topeka, Kansas.

THE ideal filling has not yet been discovered. Recently the writer called attention to the fact that porcelain was the only material yet found that could be made to approach the natural enamel in colour, texture, and lustre. We constantly employ it in entire teeth for imitating the adjoining natural teeth with perfect success, without detection. It is, therefore, the only material we possess with which we can hope to fill anterior visible cavities, and conceal our art. It possesses the one indispensable quality of perfect resemblance to the natural enamel, which no other filling material can approach. But porcelain is a refractory material and cannot be moulded into the cavity without great difficulty. Dr. Land has overcome the difficulty of working it in one way by his method of burnishing thin platinum into the cavity, filling the cup so made with porcelain enamel paste, and fusing it. The piece is then cemented into the cavity. The colour of the tooth can, of course, be exactly reproduced. To do this requires skill and much practice. The new porcelain paste that is fusible by the blow-pipe flame, in forming cavity settings may be found serviceable. That would bring it more within reach of the general practitioner, who, by practice, could learn to imitate the enamel shades and gum colours. But for the present the general practitioner must have recourse to grinding porcelain already baked, for this work. This he will find in his box of pinless and broken artificial teeth, which will furnish all the varieties of colour and shades he can require. In a very limited way he can employ the prepared porcelain cavity-stoppings, with pins or shoulders to hold them in, but for anterior cavities these are nearly worthless, so the broken-teeth box must be his main reliance.

In selecting a piece of porcelain the colour of the tooth should be matched. The colour should be darker than the enamel near it, for the piece will look lighter than it really is, as with artificial teeth, and this must be made allowance for in the colour. Allowance must be made for the cement altering the colour. Shaded cements are used in this work, and the ultimate colour of the piece depends as much upon the colour of the cement employed as upon that of the porcelain. As the colour is the essential thing, in order that the deception may be perfect, too much study and skill cannot be bestowed upon this part of the operation. The mechanical part of this operation is also fraught with difficulties. As to the method, however, a piece of artificial tooth is selected, chipped to suitable size, and ground down to nearly the depth of the cavity. The grinding is done from the body side of the porcelain in order to preserve the enamel polish when possible. The cavity is made as nearly round or oval as can be, and the sides are made regular and perpendicular, with little undercut. The piece is then fitted by the magnifier, with an engine, corundum points, and wheels. Then the proper colour of cement is selected to produce the exact shade of the natural enamel, and the piece carefully set. After the cement is well set, it and the piece are cut down and well polished. As cavities vary infinitely in shape, each one will be more or less of a distinct case. When the cavity is long and narrow, as where it follows the gum margin across the tooth, two pieces of porcelain will be required to fill it, each being ground and set separately. Care can be taken to preserve the curve of the tooth, or the lateral margins of the piece will not fit down closely to the bottom of the cavity. Grinding these curved pieces is difficult, as they break or get lost, provokingly easy. But skill can be acquired in this, as in all delicate manipulations, by patience and practice. When the piece becomes too small or delicate to hold with the fingers, it can be set in shellac on the end of a pine stick and ground safely. The shellac is easily softened in the lamp-flame, as it is required to change the position of the piece or to try it in the cavity. For large cavities, as on the face of an incisor it is best to take an impression and fit to a model, to save time. A carious or stained spot at the edge of an incisor is prepared by cutting into it from the edge and making a groove around the three sides, into which the porcelain is finely fitted and slid into the dovetail when cemented in. It must be dressed off well at the edge to avoid strain and accident. A corner is more difficult, and can rarely be made strong unless bound in with gold down the proximate side and across the edge, of which a line will show. Large proximate cavities can be done well when open to the labial face, when the corner is whole. One branch of the simple porcelain setting system is very useful, that is, the filling of cavities on the necks and roots of the anterior teeth with the red (gum-coloured) porcelain. Gold fillings here are very unsightly and disagreeable, and anything that will avoid them will be a great blessing. The gum colour must be matched carefully, and the piece neatly fitted. It is allowed to project in a rounded form from the cavity in order to restore the gum thickness in the space to some extent. After the cement is set it is finished off slightly. These pieces are extremely difficult to fit, as the cavities are usually of an extended crescent shape and must often be filled with two pieces. Small crescents can usually be ground in one piece, with care, but they will often break. Large cavities, running up on the root, require some skill in fitting, and the root must be cut to the living gum margin to conceal the exposed root and make the deception complete. Cavities embracing both neck and crown on the face of the incisors can be filled with a compound piece embracing both enamel and gum colour in proper proportions. Pink cement should be used for these gum-settings, but that which is furnished to us now is not of good enough quality for the purpose, and the ordinary colours do not show in a fine line. Porcelain settings and full crown facings have been employed to a small extent for many years by retaining with gold filling. A piece set in gold has the appearance of inlaid work or the more curious cloisonneé work. Such a piece is best set first in cement, which is trimmed out of the surrounding fissure after hardening and the fissure filled with gold. The gold filling must be done very carefully to avoid chipping the edges of the porcelain. The gold and porcelain are then carefully finished off. But a closely fitted porcelain setting set in cement is to be preferred to this as a more artistic and deceptive operation. Bone and ivory have been suggested also for cavity-settings, but such materials are not sufficiently durable, and would discolour subsequently. The one colour would rarely match the enamel, and staining would come closer to nature, but would probably discolour and disintegrate, or become carious. As porcelain setting in human enamel is strictly an artistic operation, it will be to our advantage to enquire into the technique of the arts to which it is more closely related, which we find to be those known as "inlaying" and "mosaic." Inlaying is the art of filling up incisor designs with a material different from the base or matrix, whether metal, wood, or stone, and finishing off all together. Mosaic is the fitting together of many pieces of marble, coloured enamel, or glass, etc., to form a pattern, and then grinding off the ends of the rods and displaying the picture or design in imperishable colours. A combination of the two is called "inlaid mosaic," which consists of designs in stones, pearl, etc., inserted in spaces cut in the base—such, for example, as the modern Florentine mosaic, which is composed of thin veneers of colored stones set in marble. Famous examples of inlaid mosaic, in which precious stones are set in marble, usually in relief, in the decoration of tombs and palaces, are well known. There are other varieties of this art, among which is the beautiful ivory inlaid mosaic, which consists of jewels set in ivory. Some very ancient specimens of this have been found in Assyria, Egypt, Greece, &c., it being very common in the latter country. Later nations cultivated this art where ivory carving was practised. Our porcelain dental setting is most closely related to the ivory inlaid mosaic art, the technique of which we should carefully study. Cloisonnée work is made by leaving a partition or cloison of the basis material between the set pieces, such as the old ivory cloisonné mosaics or the metal work. In the latter the porcelain or enamel is baked in the cells of metal in a pattern, and the whole polished off together, leaving the metal exposed in the lines of the design. Such an effect is produced by setting a piece of porcelain in gold in a tooth, as it is separated from the basis of enamel by a cloison of gold. Enamelling is also an art to which porcelain work is closely related, as it is necessary to cover the porcelain with an enamel as our porcelain teeth are finished. But enamel work proper is made by placing the paste upon metal before firing. Dr. Land's porcelain work is, therefore, most like enamelling, as it is placed on platinum to bake.

CHILDREN'S TEETH, THEIR CARE AND PRESERVATION.

By C. C. Corbett, D.D.S., Edwardsville, Ill.

Two causes of early caries of the deciduous teeth are considered. 1st. That pre-natal causes have a greater influence upon them than is generally supposed. The writer thinks that the dental profession should enforce the necessity there is for pregnant women to take food abounding in lime salts. The second principle cause of caries is uncleanness of the teeth and mouth. A child should be taught to brush its teeth just as soon as it is old enough, and the sooner it forms this habit the better. This should be impressed upon its mind, for it is as essential as eating, or undressing at night, or dressing in the morning, and when this habit is once thoroughly formed, the child will never depart from it; then, the good that has been accomplished, is of inestimable value, not only to the deciduous teeth, but throughout life. The writer insists upon the most tender and considerate treatment being paid the child. With regard to the best filling material to use, he thinks, some kind of plastic filling is the best. All fillings which require the use of the mallet in their insertion are inadvisable. Good amalgam should be used for the grinding surface of the molars, and on their proximal surfaces where the cavity extends up to the grinding surface; and when there are two cavities facing each other, and if the space between them is not too great, the writer fills the two as one cavity, rather than devitalise either one, or both of the teeth. The writer generally uses gutta-percha in these kinds of cavities with satisfaction. For all proximal cavities in the molars not touching the grinding surface, he uses gutta-percha, and for the anterior teeth Hill's stopping. In regard to devitalising the deciduous teeth, it is very important that every dentist should be well informed as to the time the roots begin to absorb, especially those who are in the habit of using arsenic cannot lay too much stress on this phase of the subject. Prof. C. N. Pierce estimates the retrograde metamorphosis as follows:—though he says there are many wide deviations —"the roots of the central incisors begin to be absorbed about four years of age. The lateral incisors follow a few months later. The first deciduous molars begin about the sixth year, the second molars about the seventh, and the cuspids about the eighth year." In most cases the writer has found that several applications of carbolic acid, or a solution of nitrate of silver have been sufficient for devitalising when it is necessary. After we have destroyed the pulp of one of these teeth, it should be removed and the root filled just the same as for a permanent tooth, save where the child has reached the age given in the above table. Then great care should be taken not to crowd a lot of filling through the root. The pulp canal is generally large enough to admit of the introduction of a small instrument with a turned point, by means of which one can generally find just how much of the root has been absorbed, and then fill it accordingly. In all cases where the deciduous teeth are dead when they are brought to you for treatment, and if the tooth has not been aching, and the opening into the root has been closed with decalcified dentine, it is pretty safe to fill without reopening the pulp canal. But if the end of the root canal is open it should be thoroughly cleansed disinfected, using as much care to avoid an abscess with these teeth as you do with their successors. The extraction of the temporary teeth is one of the most important subjects in practice. The writer is of the opinion that too many of our dentists do a great injury to their patients by extracting their teeth too early, and young operators are especially liable to make this mistake :—for instance, a father brings his little daughter to you, age six years, four months. The inferior centrals have made their appearance on the palatal aspect. He is very anxious she shall have straight, pretty teeth, and places her in your hands. You, very properly, extract the temporary centrals, and instruct him to return with her in four months, At this time one central has about reached its position in line. and the lateral on the same side has made its appearance. The other central is still considerably inside the arch. Then the young operator, and perhaps some older ones, thinks that these teeth must be straightened at all hazards, and extracts both temporary laterals ; one to give room for the permanent lateral, and the other for the permanent central. What is the result? The central comes into line and occupies nearly the entire space that should have been allotted to the lateral, which soon makes its appearance either posterior or anterior, to the temporary cuspid, which has to be extracted to give it room. The result is, in a few years the permanent cuspid has to erupt outside of the arch. A temporary lateral should rarely be extracted to make room for a permanent central, and a temporary cuspid seldom, if ever, is to be extracted to make room for a permanent lateral. If there is a crowded condition, let it be for a year or two, and generally it will expand and develope the arch sufficiently to make room for the permanent teeth. There is one other tooth, which if it is extracted too early, will invariably bring about a crowded condition of the permanent teeth, and that is the temporary second molar, which will allow the first permanent molar to come forward and take the place of thesecond bicuspid. This tooth,—the temporary molar—should be retained, if possible, until the child is eleven or twelve years of age.

SOUTHERN DENTAL JOURNAL.

TRUE WHEELS AND DARK JOINTS.

Dr. Staples believes that in the great majority of cases the first and greatest cause of dark joints is trying to grind a straight joint on a crooked wheel. He has found by trial that a great many new wheels are not "true," and if they should be, no one can possibly grind more than one or two half sets on one wheel and make perfect joints without straining the wheel. Recently Dr. Staples has constructed a press, by the use of which he is enabled to make wheels true before grinding each case, this has obviated dark joints. It can be done in less than five minutes, and with anything like ordinary care in the other details, it will absolutely ensure perfect joints every time.

PRACTICAL DOTS.

By W. T. Martin, D.D.S.

A rapid and easy method of cutting off teeth preparatory to mounting crowns, is to open into the pulp canal, then with a sharp oval bur, revolved by the engine, cut from within outward on the line with the gum margin, rotating the hand piece, so as to cut as equally as possible in every direction from the pulp canal. Most of the after work on the end of the root can be done more rapidly with this bur than with stones.

A small, pointed insufflator furnishes the best means of blowing powdered medicines into root canals or into the "pockets" around necks of teeth, left by the removal of tartar.

REPLACING TEETH ON RUBBER PLATES.—Where broken teeth are to be replaced by new teeth, cut away the necessary space on the lingual surface of the plate, grind the new teeth to fit as wanted, then apply coal oil to the space on the plate where new rubber is needed—next fill the space with a thick chloroform solution of rubber, and immediately press the new teeth to the place they were to occupy. Flask in bottom section of flask, covering teeth and plate with plaster, only leaving uncovered the space on lingual surface, filled by a new rubber. After the plaster has set, press into this space pieces of sheet rubber with sufficient to spread the solution previously into all parts of the space. Finish the new rubber thus introduced, as smoothly as possible, using a moderately heated spatula. Now proceed as usual. This plan is merely packing in the new rubber, before pouring the plaster in top section of flask, and is applicable to many cases of repairing.

COUNTER-SUNK TEETH, mounted with pink rubber gums, black rubber on palatal surface of the plate, and pink rubber on lingual surfaee, all properly constructed, makes about the best and most artistic artificial denture that can be made on a rubber base.

THURLINGTON. Dr. E. Parsons, says :—"This is one of the best therapeutic agents effective in sore mouth, pericementitis, sometimes following the filling of teeth, at the above named remedy.—HOW TO USE IT.—Fold a piece of bibulous paper several times, saturate it with the remedy full strength, and lay it on the gum as nearly over the apex of the root as possible, keep it there twenty or thirty minutes. If the gums are spongy and bleed easily, apply it with a brush or mop, and wait a few minutes before rinsing the mouth. If there is general inflammation, dilute one part turlington with three parts of water—of this take one teaspoonful and wash the mouth. If the throat issore, gargle with it. The wash is excellent for soreness caused by plate—it is equally good for burns and bruises.

THE ARCHIVES OF DENTISTRY.

AN AMALGAM CROWN.

By Dr. Geo. S. Staples, Sherman, Texas.

Amalgam crowns, for back teeth, the writer thinks, are far superior to, as well as much cheaper than any form of crown. His method of constructing these substitutes, is, fully cleanse the root of all decay, leaving all points, if any, of sound enamel and dentine intact. Then twist a piece of binding wire around the root to get size. Then with a piece of copper plate, about thirty guage, make a band that by soft soldering will approximately fit the root, and allow the mouth to close naturally. In nearly all cases there will be sufficient retaining points to hold the crown, but if not, insert Bonwell's pins in roots fastened with amalgam; then with band in place fill it full of amalgam. Cause the patient to close the mouth, thus you can obtain an articulation that it is impossible to get with any other crown, besides perfect joints and no cements to wash out, nor overlapping edges to catch secretions. The band is allowed to remain long enough for the amalgam to thoroughly harden, when it is cut off and finished with sand-paper disk, etc., being careful to leave no overlapping edges.

ALVEOLAR ABSCESS WITH NECROSIS.

W. Winston, D.D.S., Montana.

Case I.—On January 11, Mrs. R. called, complaining of soreness in and about the right superior canine; upon examination found the pulp exposed and badly diseased; the soft tissues immediately surrounding the tooth were hyperæmic and presented an angry appearance; applying the dam the opening into the pulp chamber was enlarged and the pulp entirely removed, wiped out the canal with peroxide of hydrogen, and placed it in an application of corrosive sublimate 1 in 1000, the cavity was sealed and the soft tissues painted with a solution of aconite and iodine, dismissed the patient with instructions to return on the 3rd day, she however returned on the 5th day with face badly swollen, the swelling firm without fluctuation ; renewed the canal dressing, scarrified the gum and directed the patient to keep a hot raisen applied directly over the affected part. During the day and on the following morning pus was present and discharging at the gingival margin ; the sac was situated just at the apex of canine root. A free horizontal incision was made, the contents expelled and the sac itself washed with a two per cent. solution of carbolic acid ; placed a carbolised linen tent in the incision ; on the next day the old pus tract was closed and promised to heal without destruction of the periodontal membrane. The sac was now daily injected with peroxide of hydrogen, using hypodermic syringe with blunt needle. This treatment continued for some days, when the buccal plate of the alveolar process immediately over the canine root became loosened. This was removed and the sac washed out with tincture of iodine, half strength ; the peroxide treatment was then resumed and continued daily until the formation of pus had been reduced almost to the minimum. At this time the canal dressing was discontinued and the canal filled with gutta percha ; the peroxide was now injected every third day. After about ten days the secretion stopped and the fistula closed, leaving the parts entirely without soreness and apparently in a healthy condition.

Case II.—Was a traumatic abscess resulting from a fall, the exact history of the case could not be obtained, it, however, bore evidence of extreme neglect. At the time of first seeing the patient, the trouble had existed about six weeks ; during the latter portion of that period the patient had received medical attention with some benefit. The abscess was seated immediately to the right of the symphysis, and implicated the incisors on that side. Two fistulæ existed : one opened on the lingual surface of gum, the other was external and opened under the chin, the pus tract lying along the inner surface of maxillary bone. The two incisors being very loose were wired in and the parts washed with the two per cent. carbolic solution ; this was continued for some days, when the linqual plate of the alveolar process and the septum between the two affected teeth became loosened ; these pieces were removed and the tincture of iodine injected. After this, the daily use of the peroxide was relied on ; under this treatment the parts kept up a slow and uninterrupted improvement until the lesion healed and the teeth regained their attachments.

IODOFORM IN FILLING PULPLESS TEETH.

T. H. LIPSCOMB, D.D.S., WACO, TEXAS.

Iodoform in filling roots of dead teeth gives in the hands of the writer uniform success. This method is: The tooth having been thoroughly treated until all tenderness and soreness have disappeared, the rubber dam is then carefully adjusted, so as to prevent the iodoform from getting in the patient's mouth. A paste is then made with iodoform and carbolic acid, which is carefully introduced and forced down into the root canals, care being taken that these canals are filled solidly and free from air bubbles. The excess of moisture is then taken up by absorbent cotton or spunk, and all the unnecessary iodoform removed, after which a filling of cement is placed—sealing the cavity so as to be impervious to moisture. This remains for a few days, and if no soreness follows it is then ready for the permanent filling of gold or amalgam. The iodoform when used in this way and care taken to prevent any of it getting into the mouth, is not at all objectionable to the patient as some would think.

SULPHATE OF COPPER IN THE TREATMENT OF PYORRHŒA-ALVEOLARIS.

By J. W. WHIPPLE, D.D.S., ST. LOUIS, MO.

The writer suggests the following plan of treating Pyorrhœa alveolaris: Bind a copper wire around the tooth or teeth afflected and allow it to remain until a cure is brought about. The action of the sulphuric acid in the mouth will cause a slow but constant formation of sulphate of copper, which will settle in the pockets and thus produce a cure by its ceaseless action both day and night. The wire can also be so arranged as to close the mouth of the pocket, and thus prevent the accumulation of the foreign substances which always so much retard successful treatment. If necessary the patient can moisten the wire with a sufficiently weak dilution of sulphuric acid twice a day.

LITTLE RUBBER AND IMPRESSION CUPS.

Dr. G. A. Bowman, says : Cut a common hollow rubber ball, of any size desired, in two, and you get two cups—twins—which have no equal in which to mix small quantities of pastes, plaster and polishing materials of all kinds for use at the chair or work-table. They cannot be upset, are easily cleaned and always ready. From a No. 16 lower impression cup with acute angles, cut off about an inch from the posterior ends. The anterior part can be used for taking impressions of the anterior teeth, superior or inferior. The posterior ends are to be perforated in the centre of bottom. From sheet brass or copper cut handles of suitable length and width, perforate one end, and with a small copper rivet and washer unite them to the cup, riveting on the under side. This cup will revolve on the rivet, enabling you to take any impression of two or more teeth situated anywhere in the arches above or below, at any angle—invaluable in crown and bridge work—perforate the sides of the cup to retain the impression material. All can be nickel plated, and when finished has cost but a trifle in time and money, but will save both in the using.

Reports of Societies.

SOCIETE DE BIOLOGIE OF PARIS.

At the meeting of this Society on May 12th last. M. Galippe showed a molar tooth of an Asiatic elephant, which came away spontaneously on May 1883. To all outward appearance the tooth was perfectly sound ; after the removal of a small piece for microscopical examination, it still weighed, in the dry state, 1 kils 729 grm., the root was covered with a crust of varying thickness which attained in places 3 or 4 millimetres, and of a calcareous appearance. The inferior extremity of the fang appeared to have been the seat of a rather severe pathological process, and presented sharp ridges quite incompatible with a normal state. We found, said M. Galippe, that the calcareous crust covering the root consisted of salivary tartar, *i.e.* micro-organisms which had caused the deposition of the calcareous salts dissolved in the saliva. The examination of the lesions was made by comparing this tooth with an elephants' tooth said to be perfectly healthy.

The cement was the seat of every degree of change from the most superficial erosion to almost complete disappearance; micro-organisms were found not only on the surface, but even in its very substance.

In the several spots where the dentine was exposed it was found to be the seat of more or less deep excavations covered with masses of micro-organisms, disposed more or less in a regular order, and more or less compact. These micro-organisms were found to have penetrated into the canaliculi and we were able to follow them for a considerable distance into the dentine. These lesions do not present any essential difference from those M. Malassey and myself have found in man and on the contrary they are strikingly similar to them.

We came to the conclusion that the Asiatic elephant when kept in captivity may be affected with the disease which we have described in man, under the name of infectious arthro dental gingivitis, or simply infectious gingivitis (pyorrhœa alveolaris).

Dental News.

GENERAL MEDICAL COUNCIL.

May 24th.

Mr. Marshall, President, in the chair.

Report by the Dental Committee on the case of George Thomas Ockleford Crocker was considered. Mr. Muir Mackenzie and Mr. Farrer attended as legal advisers to the Council.

Mr. Farrer: This is a case relating to George Thomas Ockleford Crocker, whose name is on the Dentists' Register by virtue of two qualifications, one as having practised before the 22nd of July, 1878, and secondly, he has had a later qualification granted him by the Faculty of Physicians and Surgeons of Glasgow. On the 7th of May, 1888, the Faculty of Physicians and Surgeons of Glasgow passed a resolution that Crocker's name should be erased from the list of the Faculty's Licentiates in Dental Surgery because he had violated the obligation in the declaration which he subscribed on admission, that he would not advertise or employ any other unprofessional modes of attracting business. Notice of this was given in the usual way to this Council, and the facts were submitted to the Dental Committee, and this is the report of the Dental Committee which contains the whole facts very shortly:—

(*a*) The name of George Thomas Ockleford Crocker was placed on the *Dentists' Register* on October 2, 1878, as "In practice before July 22, 1878," and, on January 28, 1880, there was added in the *Register* the Qualification of "Lic. Den. Surg. Fac. Phys. Surg. Glas. 1880."

(*b*) On May 7, 1888, the Faculty of Physicians and Surgeons of Glasgow resolved that the name of Mr. Crocker be, and it was thereby, erased from the list of the Faculty's Licentiates in Dental Surgery, in respect that he had violated the obligation in the Declaration which he subscribed on admission, that he would not "advertise or employ any other unprofessional modes of attracting business."

(*c*) That, by the erasure of Mr. Crocker's name from the list of Dental Licentiates of the Faculty of Physicians and Surgeons of Glasgow, his Licence from that Faculty has been cancelled.

(*d*) That, from a communication addressed to the Solicitor to the Medical Council by the Secretary of the Faculty of Physicians and Surgeons of Glasgow, it appears that subsequently to the Motion to strike the name of Mr. Crocker off the list of Licentiates in Dental Surgery being laid on the table of the Faculty, two attempts were made to communicate with Mr. Crocker by registered letters addressed to him at both his addresses in Oxford Street, Manchester, but both attempts were frustrated by Mr. Crocker personally refusing to accept delivery of the letters, previous attempts to communicate with him having been similarly treated.

The case, therefore, resolves itself simply into one of those we often have before us, of directing the Registrar to make his Register correct by removing the one qualification that has been withdrawn. It is not like Partridge's case, where the whole of the qualifications being withdrawn we had to go into the consideration of the case to see whether his name ought to be taken off or not. This is no case of taking the name off, but simply a case of registering the fact that the Faculty of Physicians and Surgeons of Glasgow have withdrawn the qualification that was granted to him. His name will remain on the Register, but that qualification ought to be withdrawn.

The President: The motion I have to put from the chair is the following: "That the qualifications of Licentiate in Dental Surgery of the Faculty of Physicians and Surgeons of Glasgow appended to the name of George Thomas Ockleford Crocker be erased from the *Dentists' Register*."

The resolution was agreed to.

Saturday May 26th.

Mr. MARSHALL, President, in the chair.

DENTAL BUSINESS.

The Rev. Dr. Haughton said that his attention had been called by a very high class of dental practitioners and surgeons in Dublin to the opinion which they held that there could be no better mode of commencing medical study where defined as apprenticeship under a medical practitioner, or attending a public medical institution. In addition to that he wished to propose "That the certificate produced by a student of having entered and paid fees at a Dental Hospital which has on its working staff not less than three registered medical practitioners shall be accepted as evidence of the commencement of medical study as a medical student, and that the Regisrtar shall, on production of such certificate, together with that of having passed the Preliminary Examination, enter the name of such student on the *Medical Students' Register*." In all well-conducted Dental Hospitals the students learned a considerable amount of anatomy, as, for example, the anatomy of the fifth pair of nerves, and the anatomy of the head and face. They also had the opportunity of learning a good deal of minor surgery, and he thought that that kind of practice and instruction might be regarded as a *bona fide* commencement of medical education quite as good as that of going under a medical practitioner. He would simply move the resolution.

Sir William Turner: I venture to think that this motion is quite unnecessary, because any student can, at present, commence medical study on the certificate of a registered medical practitioner. I think I am right in saying that that is one of the modes specified.

The Registrar: Yes, it is supposed to be included in pupilage.

Sir William Turner: That is that any student who has passed a preliminary examination can have his period of study dated from the time when he presents to the Registrar his certificate of having passed that examination along with the certificate from a registered medical practitioner that he is his pupil, so that any one of these three gentlemen acting as officers to any Dental Hospital can, without any further resolution on the part of the Council, certify that A. B. has begun his medical study, supposing that he has passed a preliminary examination. Therefore, I do not think that this resolution is necessary.

The President: Do you wish to press it, Dr. Haughton?

The Rev. Dr. Haughton: No, not under the circumstances I will ask permission to withdraw it.

Sir John Simon: I wish to enter a *caveat* against the acceptance of the doctrine that any one of these three gentlemen can certify that a student has begun his medical study.

Sir William Turner: It is a law of the Council. Anyone of these three registered medical practitioners acting as a medical officer to a Dental Hospital in giving instruction in the Hospital on some subject bearing upon medical education; he gives instruction, for example, in dental anatomy, and dental physiology to his pupils.

The Rev. Dr. Haughton: We have no pupils in Ireland in the same sense as England.

Sir William Turner: The practitioner can make the student his pupil.

The Rev. Dr. Haughton: The institution of pupils does not exist in Ireland.

The President: It is stated that the certificate can be given by a master, a teacher, or an officer of a medical school.

Rev. Dr. Haughton: It would be forcing us to introduce a system which we do not possess.

Sir John Simon: The contention appears to be that dental means medical, but I think that medical and dental are distinguished from one another. I admit that the question has never been before us, and that we have perhaps tacitly acted on the assumption that medical excludes dental. We have, perhaps, proceeded on the assumption unguardedly: but I certainly think that we ought not in the interests of medical education to accept the doctrine that a man's being sent for a year to a dental hospital, shall be taken as equivalent to receiving a year's medical education. I am not prepared to accept that and I think perhaps that Dr. Haughton will hardly press it.

Rev. Dr. Haughton : I have asked leave to withdraw the motion.

Sir John Simon : I merely wish to have my *caveat* entered against the view that was expressed.

Permission to withdraw the motion was then given.

Mr. Brudenell Carter brought forward the following notice of motion :—"To call attention to an advertisement issued by H. F. Partridge ; and to the names of certain registered medical practitioners appended thereto ; with a view to action being taken in the case by the bodies from which these gentlemen derive their qualifications." He said he thought it might be useful it attention were called to what had been actually done with regard to Mr. Partridge. It would be within the recollection of the Council that at its last meeting, it ordered the Registrar to erase from the Dental Register the name of Mr. H. F. Partridge, who had issued an advertisement, to which he need not further refer. A few days ago, there was put into his letter box in an envelope, an advertisement still issued by Mr. Partridge, very much on the same lines as the advertisements that were before the Council. He still called himself L.D.S., placing after those letters the words "Royal College of Surgeons ;" and then followed, "under the patronage and recommendation of the following," mentioning several names of ladies, bishops and others, including the names of seven registered medical practitioners all of whom were well known to many of the Council and as gentlemen of eminent position. He had not read the names, as he did not think it desirable that they should appear in the reports of the journals. He presumed that it was right to suppose that those gentlemen were in ignorance of the use made of their names, and that they were not really patronizing or recommending such a person as Mr. Partridge ; but if by chance they were doing so they would be committing an offence of which the bodies from which they had received their qualifications might well take cognizance. It appeared to him that if the representatives of those bodies present at the Council would call their attention to the advertisement, in all probability the gentlemen in question would be applied to by the authorities, and would have the opportunity of clearing themselves from the imputation made upon them or taking such actions as they might deem desirable. He should be happy to find any motion upon the notice he had given, but he thought that his object would be equally obtained by simply calling attention to the facts of the case.

Sir Dyce Duckworth said it appeared that there was no Licentiate of the College of Physicians of London in the list of names referred to. If there had been, he should have called the attention of the College to the fact in order that the gentlemen might be summoned.

The President: You think it will be sufficient to call the attention of the Council to the subject?

Mr. Brudenell Carter: That will probably fulfil the object I have in view.

The President: Perhaps you will leave out the last words of the notice, "With a view to action being taken in the case by the Bodies from which these gentlemen derive their qualifications;" because those words rather seemed to insinuate that they would not take action. If the notification appears in the proceedings calling attention to the subject, I think it will be sufficient.

Mr. Brudenell Carter: Quite so.

The President: Then the two last lines will be struck out when the notice is placed on our Minutes.

ESKELL *v.* GIBBS.

[The *Times* publishes the subjoined report of this case.]

At Marlborough Street, John Arthur Gibbs, 34, well dressed and described as a surgeon dentist, of Cunningham Road, Shepherd's Bush, was charged with embezzling £5 5s., received by him on account of his employers, Messrs. Isidore and Ruby Clifford, who carried on business as Eskell & Webb, at 128, New Bond Street. Mr. Arthur Newton, solicitor, prosecuted; and Mr. Bernard Abrahams conducted the defence. The evidence called on behalf of the prosecution was to the effect that the defendant entered the employment of the prosecutors as manager on the 16th of last September at a salary of £5 a week. On February 1st an arrangement was entered into with him for taking over the business, and an agreement was drawn up in writing. It was afterwards discovered that on January 25th the prisoner had omitted to account for £5 5s. which he had been paid by a Mrs. Hearnden, and when spoken to about the matter he said that he knew nothing whatever of it, and if he were given into custody he should have good ground on which to found an action. Subsequently it was discovered that he had not entered in the day-book £21 received from a Miss Green, and when told that an explanation must be given or he would be given into custody he became abusive. The defendant was a licentiate of the Royal College of Surgeons, and under the agreement of February 1st was to take over the business and use the name of the firm, and for that privilege was to pay the prosecutors £5 a week, and if the annual receipts exceeded £1,000 a year he was to hand to Messrs. Clifford a fourth part of any money received above that sum. On May 2nd notice to terminate the agreement was given to the defendant, and subsequently the prosecutors received information which resulted in the arrest of Gibbs. About a fortnight ago another arrangement was entered into, to the effect that the defendant should go to St. James's Street, where Messrs. Clifford had another business establishment, and receive a salary of £6 a week, from which £1 weekly was to be deducted until certain outstanding debts due by Gibbs were paid off. Mr. Abrahams, for the defence, said he should rely upon this last agreement as showing that was understood and acknowledged that the money in question was merely a debt, and was treated as such by the prosecutors. The magistrate remanded the defendant till Tuesday, allowing bail in two sureties of £75 each.

[No such name as John Arthur Gibbs appears upon the Dental Register for 1888. Ed. B.D.S.]

MANCHESTER COUNTY COURT.

(Before His Honour Judge Russell.)

A DENTIST'S CLAIM.

Samson Ralph Hickman, dentist, Market-street, Manchester, sued Edwin Crabtree, cotton waste merchant, Heywood, for £4. 4s, as the balance due on a set of artificial teeth, or for damages of breach of contract by the defendant. Mr. J. Sims appeared for the plaintiff and Mr. R. Smith for the defendant. The plaintiff said that in March last he was instructed by the defendant to prepare a set of teeth. The price was £5. 5s., and the defendant paid him £1. 1s. on account. When the teeth were finished the defendant tried them, and said he could not wear them, and he declined to take them home or try them further. He then put them on the table and said he would not pay for them, although witness offered to make any necessary alteration. Cross-examined by Mr. Smith witness said he certainly undertook that the defendant should be able to masticate with the teeth in the course of time. He did not recollect the defendant saying that he could not bring the teeth together in the mouth. He refused to let the defendant take the teeth away until they were paid for. He admitted getting out of temper and telling the defendant he would serve him with a writ and make him pay over and over again.—The defendant said when he got the teeth they were so painful that he could not keep them in his mouth, and he could not bring them together by so much as the breadth of a finger. He declined to pay for them until they were made satisfactory.—The Judge said the reason why the teeth were ordered was that they should be used. The defendant had it represented to him that they would fit him without pain. When the result was not obtained he reasonably declined to pay for them until they were satisfactory. A verdict would, therefore, be given for defendant with costs.

Hospital Reports.

MONTHLY STATEMENT of operations performed at the London Dental Hospital, Leicester Square, from May 1st to 31st, 1888:—

Number of patients attended		2933
Extractions	Children under 14	529
	Adults	1084
	Under Nitrous Oxide	809
Gold Stoppings		526
Other Stoppings		1217
Advice		117
Irregularities of the Teeth		135
Miscellaneous and Dressings		397
Total		4814

JAMES F. COLYER, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, Leicester Square, from May 1st to 31st, 1888 :—

Number of Patients attended		4036
Extractions	Children under 14	412
	Adults	487
	Under Nitrous Oxide	933
Gold Stoppings		185
Other Stoppings		892
Advice and Scaling		669
Irregularities of the Teeth		280
Miscellaneous		266
Total		4124

Frank Lankester, L.R.C.P., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of May, 1888 :—

Number of Patients attended		755
Extractions	Children under 14	556
	Adults	
	Under Nitrous Oxide	48
Gold Stoppings		77
Other Stoppings		107
Miscellaneous		200
Total		988

Charles H. Smale, L.D.S., Eng., *House Surgeon.*

The Dental Hospital of London, Leicester Square, has received notice that a legacy of £2000 has been bequeathed to it by the late Mr. Capel Carter.

APPOINTMENT.

Mr. William De Burdy Woodburn, L.D.S., was unanimously elected Surgeon Dentist to the Glasgow Western Infirmary on the 6th June.

British Journal of Dental Science.

No. 492. LONDON, JULY 16, 1888. Vol. XXXI.

ELEMENTS OF SUCCESS IN THE OPERATION FOR CLEFT PALATE.

By Howard Marsh, F.R.C.S., Eng.

Assistant Surgeon to St. Bartholemew's Hospital; Senior Surgeon to the Hospital for Sick Children.

It is generally agreed that the plan of operating for cleft palate which Mr. Thomas Smith has introduced, and which includes the administration of chloroform and the use of the special gag which he has invented, is, in the hands of those who are familiar with it, one of the most satisfactory of all plastic operations. Cases, however, sometimes present themselves which show that there are certain particulars which still require to be advocated. Patients are not rarely admitted into the hospital in whom a previous operation has failed, apparently from the omission of some essential point, while in other instances the opinion has been expressed that the condition of the palate was so unfavourable that no operative treatment ought to be undertaken, and yet these cases presented no feature of unusual difficulty, and were subsequently cured by a single operation. I thinks, with these examples in view, it may be useful to state the circumstances upon which success mainly depends.

1. In the first place the age of the patient is very important. The mistake sometimes made is that of operating too early. No doubt it is possible to cure the slighter forms of cleft of the soft palate in children who are only a few months old. But even in the most favourable cases failure will be more frequent than success. Even when the cleft is limited to the soft palate the operation had better be postponed till the child is between two and three, or older still, unless he is well grown and strong. In cases in which the hard palate is involved operative treatment should be deferred till the child is at least three and a half. In the average run of cases it is

better not to operate till the patient is between four and five. No doubt the sooner the operation can be performed with success the better, especially because the improvement in articulation will then be most marked. The fact is, however, that when done earlier than the time I have mentioned there is a great chance that the operation will fail, and then future cure will be rendered much more difficult. Besides, the operation is so considerable that in very young children it is by no means free from danger to life. In instances in which the local conditions are very unfavourable (these are mentioned below) the operation should be delayed even beyond the fifth year, for, as growth proceeds, the fissure will tend to become narrower and the soft parts more fleshy and firm. Several cases have come under notice in which, though when the children were three years old the possibility of closing the fissure seemed very doubtful, all the conditions had become favourable when the patient had reached the age of six. Indeed, were the mere closure of the palate the only question, there is no doubt that the best age for operating—I mean the age at which the risk of failure would be least—would be beween nine and twelve. Of course there are many reasons for operating earlier; but the fact remains that in difficult cases the chance of success steadily increases as childhood advances.

2. Care must be taken to see that the patient is in good general health before tho operation is performed. The temperature should be taken morning and evening for two or three days before it is proposed to operate, and if it is not absolutely normal the operation should be postponed. Care must also be used to ascertain that the child has not been exposed to any of the exanthemata, especially scarlet fever. Should the patient have a cough, no matter how slight, or diarrhœa, the operation ought to be postponed.

3. After the age and health of the patient come the width and the shape of the fissure and the conformation of the bones at the roof of the mouth. The mere anterior-posterior extent of the cleft is immaterial. It is quite as easy to close a fissure that involves the whole length of the hard palate, as it is to close one of similar width that involves only the posterior part. Indeed, it is sometimes easier, because the closure of the anterior part removes tension from the sutures posteriorly, where union is most likely to fail. The really important points are the width of the fissure, the shape of its anterior

end, and the height or pitch of the arch of the hard palate. As to the width of the cleft, it is obvious that, other things being equal, the wider the cleft, the more difficult it will be to close it. As to the anterior end of the cleft, when

Fig. 1.

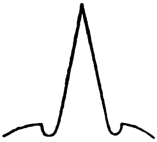


Fig. 2.

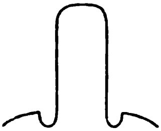
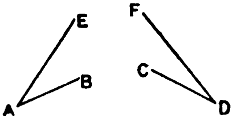


Fig. 3.



this is pointed like a thin wedge (Fig. 1) the shape is favourable; but when the anterior end is rounded like the bow of a hairpin (Fig. 2.) even though the cleft further back is not very wide, the difficulty of closure will be considerably increased. As to the height of the palate and the shape of the arch, the higher the arch and the more it approaches the perpendicular—the width of the cleft remaining the same—the easier will the closure be; while the lower the arch the more difficult does closure become. This is shown in Fig. 3. Supposing that in each of two cases the cleft is half an inch wide. and that in one the arch takes the direction of ABCD, and in the other the direction of AEFD: when the soft parts are brought down, the flaps AB and CD will be too short to bridge over the gap; but when the much longer flaps AE and FD are brought down, they will meet easily, and even overlap.

Supposing that the operation is performed in accordance with Mr. Smith's published directions, there are several points that have a considerable effect on the result. The first is that when the edges of the cleft have been pared, the soft parts on either side should be freely separated, not only from their general connexions with the bones which they cover, but especially from their line of attachment to the posterior border of the horizontal plate of the palate bone—that is, along the transverse line of junction of the soft with the hard palate. As this line of attachment is very firm, separation must be affected by the free, though careful, use of blunt-pointed curved scissors, employed first to divide the structures along this line, and then, their blades being closed, as an elevator to complete the separation further forward, if this has not been already done. When this proceeding has been thoroughly carried out, the palate will hang in a flaccid state in its whole length, and in favourable cases its edges will admit of easy approximation. Another point is that when the cleft is extensive the soft parts should be detached from the bones, not only along the borders of the cleft, but outwards and forwards nearly to the teeth. Unless this is done, the rapid reunion that takes place between the soft parts and the bones will tend to restore the former to their original position, and will thus produce mischievous traction on the line of sutures. This wide detachment of the soft parts—varying, however, of course, with the extent of the cleft—will do no harm, for as blood reaches them chiefly from the sides (the branches of the posterior palatine artery running not far from the alveolar border) their mere separation does not materially injure their vascular supply. Another point is the relief of tension on the line of sutures by making lateral incision, Those who operate only occasionally are a little uncertain as to the length to which they should be made, so that they are apt to cut either so freely as to endanger the vitality of the palate, or so sparingly that tension is not sufficiently relieved. The rule is that the incisions should run from before backwards and a little outwards, midway between the sutures and the alveolar border of the palate. The whole thickness of the palate should generally be divided in the anterior half of the incision. In the posterior half it will be enough to divide merely the mucous membrane without cutting deeply into the other layers. By this course the large branches given off from the posterior palatine artery are preserved to supply the tissues, and the possible danger of injuring the posterior palatine artery itself is avoided. The relief of tension obtained by this proceeding is shown by the extent to which the edges of the divided mucous membrane immediately retract. The precise length of the lateral incisions will vary in different cases ; the guide must be the amount of tension that has to be relieved. This can best be ascertained by examining the palate, after the edges of the cleft have been brought together, with the tip of the finger ; and the operator must prolong the incisions until he finds that the parts have become distinctly flaccid, and that they no longer give the sensation of a tense dome, and that none of the sutures have the appearance of dragging. When the the soft parts are scanty, and it is found that as the sutures are passed there is considerable tension, or even that the edges cannot be brought together, it will be best to make the lateral cuts at once, and then, except in cases in which the operation had better not have been attempted, the parts will come together. As to the sutures, these should be of silver for the hard palate, and of horsehair, mainly or exclusively, for the soft; and the first to be passed should be a fairly deep silver suture, obtaining a secure hold, at about the junction of the hard with the soft palat. Then the soft palate should be closed to the tip of the uvula; and, lastly, the hard from behind forwards. If the sutures in the hard palate are producing marked tension, they should be loosely twisted for the moment, and should be tightened with torsion forceps only after the side cuts have have been made.

For four or five days after the operation the child should be fed exclusively upon milk and beef-tea, with a little brandy added to the milk if this seems necessary. From the sixth day to the fourteenth he may have, in addition, fine bread crumbs well softened in gravy; bread sauce, made by scalding finely-grated bread crumbs in milk; potato finely minced in gravy or beef-tea; corn-flour, or ground rice puddings made with milk and eggs, or soft custard pudding. Only when the palate has healed, and the sutures have been removed should solid food be allowed. As harm may be done by asking the child to open his mouth to show how the palate is getting on, it is best to follow the plan of requesting that no one should look at the palate for the first week. Looking can obviously do no good; for even if union is failing to take place nothing can be done. The best chance always is to keep the palate at complete rest. Should the child flag, or look pale, or not take his food, he should, even on the second or third day, if the weather is warm, be sent out for a drive—if this can be done—twice a day; or he should be allowed to be up and walking about, for this will do no harm if he is carefully watched. Several times I have followed this plan with advantage. When children are evidently doing well, they may be kept in bed, where they are most easily managed, for a week, and then allowed to be up. As a rule, no local application should be made to the palate. Certainly there should be no syringing. Sometimes, however, chlorate of potash may be usefully added to the milk, in which it is nearly tasteless, or the mouth may be rinsed with a 2 per cent. solution of boroglyceride. The sutures are sometimes, I believe, removed much too soon. As a rule, they should not be taken out till the tenth day. It will do no harm to leave them in for a fortnight. It is remarkable how much closure may occur by granulation in cases in which primary union has partially failed. In several cases, though at the end of a week only a narrow bridge remained between the two edges of the cleft, complete union has subsequently occurred by the gradual extension of granulations.

But little assistance, in regard to prognosis, in particular instances, can be derived from statistics in such an operation as staphyloraphy. Each case must be judged upon its own merits. It may, however, be said that in distances in which the patient has reached an appropriate age, and is in good health; in which the soft parts are fairly abundant; and in which the details alluded to above receive attention, failure will be so rare that operative interference may be confidently recommended. I have made no reference to other forms of operation that have been recommended by different writers, for, so far as I have been able to judge, the proceeding devised by Mr. Smith is by far the best with which I am acquainted.

AN UNUSUAL COMPLICATION FROM TAKING A CAST FOR AN OBTURATOR.

By Campbell Williams, Esq., M.R.C.S.

A.B., aged 24, had suffered from syphilis which had caused, amongst other lesions, necrosis of the palatine processes of the superior maxillæ, where they, and the horizontal plates of the palate bones, meet in the mesial line. The latter were intact, but part of the inferior border of the vomer in the shape of an arch had been destroyed. The resulting perforation between the buccal and nasal cavities measured a quarter of an inch in diameter. All active signs of specific mischief being in abeyance, the patient determined to obviate the inconveniences usual to such a perforation by means of an obturator.

To this end she consulted her dentist. He proceeded to take a mould of her mouth in "sento," and having given sufficient time to obtain a good impression, found on trying to withdraw the tray, that it was firmly held. Slight traction was used and its removal effected. He then discovered that the perforation was filled by a portion of "stent" which had become detached from the mould. Owing to the want of proper instruments all his attempts to extract it were futile. Eventually I was called in, and found a mass of the now firmly set composition blocking up the perforation and occupying the nares. All attempts to withdraw it, through the aperture of entrance or to push it back into the posterior nares, failed. At last by means of a closed Bellocq's sound, introduced through the perforation, it was forced as low down into the right anterior nares as its bulk would allow. It was then crushed into three pieces by strong necrosis forceps and removed through the nostril. Subsequent examination of the mass showed that its form and size was that of a small walnut.

In conclusion, I may remark that the gentleman, in whose practice this accident happened, has made over a dozen obturators for some similar cases without any difficulty.

JOURNAL READING.

(Remarks made at the Glasgow Dental Hospital.)

By Dr. Cowan Woodburn.

That the perusal of "Journals" is the means of keeping the busy practitioner "well up" in knowledge and even with the ever proliferating novelties of his profession is unequivocal, it is the friction that keeps his machinery ever brightly polished, and the oil that sustains its power of running sweetly. The value of journal contribution, and journal reading cannot be too highly recommended; the latter, in fact, should be engrafted into the very nature of the dentist, he being like other men, "a creature of habit," systematic journal reading should be systematically cultivated until it establishes itself a necessity of his existence, positively as essential to the workings of his external life, as food and drink is to the up-keep and healthy performance of the functions of his inner, organic being.

If men who do not read the journals would only listen to voice of experience, and not pooh-pooh the appeal as an excrescence of hyper-zeal "signifying nothing," but for a time regularly not only buy the journals but read them, in a short time they would realise the advantages they had missed. the privileges they abused, speedily the garden gates would be opened, and their backs turned upon the rank unweeded ground on which in ignorance they had unconsciously dragged up an existence.

If this should meet the eye of such as do not read the journals, let them answer me the question—Why take the lees when the cup of ruby wine is put into your very hand? Why live in noisome cavern when the sun is offering to all men alike, its genial influence. As I have said these remarks allude to men in the active work of life, and it is difficult to create new habits amid advancing years, the old tree with its bent and strength of accumulation of time is hard to new fashion, but the young twig, with its succulent tissues, fresh and green, still retaining the emblems of newly born life, it is then you can, with assurance, train its growth, and command its future, so it is with all phases of animal life—and no less it is true in the up-bringing of the Dental student.

Let the fathers of the dentist race give a little time to the nurturing of their offspring. Help them to find ". . . a way to rise in, a sure and safe one. . . ." let them point out the shoals and rocks against which they themselves have struck in the stream of life ; let them light up the paths of ignorance with the torch of their learning and experience, and student life will cease to be the wrecking, stumbling, wrong impressioned, bad habited thing it often is. Some students are more favoured than others, as some families in society are the better circumstanced, and a level of educational advantages does not exist, and consequently the fight of life not equally fought.

What has drawn from me these remarks, although long alive to the facts, was the reading of "Advice to Advanced Dental Students," in the May 1st issue of the *British Journal of Dental Science.* I am not going to discuss its merits, but that they are high is beyond all question in the estimation of experienced men, and something in the direction of what I would like to see—the points are more for men in practice than students in preliminary training.

Let men contribute material suitable for the student capacity. Let editors provide a "students" corner in their journal, when, while they draw from senior admonition (both in regard to the best interests of the Dentist himself, as to his patients), they are insensibly inculcating the habit of journal reading which I have shown is so necessary for the perfection of that condition which alone elevates his calling from the drudgery of penance into an occupation of delight. Let publishers send copies gratuitously,—it will be a commercial gain,—to every place where Dentistry is taught, and let teachers point out, especially to their students the desirability of a regular, and well-applied study of each as they periodically appear.

These remarks—poor in pith—are stirred by no other feeling than a zeal for affording opportunities to the future members of the profession to *adorn* and not *smudge* the structure of Dentistry, and I feel confident they will secure the interest of all good, unselfish men, all who loyally lean to the side of progress, and will gain their appreciation in the form of practical sympathy.

GUTTA-PERCHA; A PERMANENT FILLING-MATERIAL.*

By Prof. T. FOSTER FLAGG. Philadelphia.

After a few prefatory remarks Dr. Flagg said, I appeared before you ten years ago as a plastic specialist, for I had not used gold in my practice for two years. The position that I occupied then has been, as many of you know, much misrepresented, although perfectly understood. My intimate friends have never seemed to lose their respect for the position I have taken, for they knew why it was I had taken it. Ten years ago I said to them that I had to the full only those soft teeth under my charge which seemed to me to indicate the requirements of a plastic filling. I had been sixteen years working upon plastics to arrive at that peculiar result; and if I had been sixteen years working in this direction with a diminution of only six per cent. per annum in my practice of gold, in order that I might concentrate my energies entirely upon my work in that one field of dental practice, it certainly was nothing extraordinary that after all that time I should have arrived at "no gold used." If I had abandoned all other kinds of work except gold work I should have arrived at the result of "nothing but gold;" I should have had no teeth under my charge except strong live teeth of good structure; and for such teeth, and with cavities in accessible positions, gold is the king of filling materials. This is an opinion I have always held and the position I have always enunciated: but at the same time feeling that there was a large and ample field of work in connection with other kinds of cavities in other kinds of teeth. Little by little I urged this upon the attention of dentists, and the good teeth that could be safely filled with gold I sent to other men, because I had more than enough, and I begged all my friends to send to me all those teeth which they had decided to extract and to save which the patient might prefer to have an effort made; I told them I would undertake the work of saving such teeth, with a definite purpose, which was to learn and teach how to work with phastic materials in that direction. Since that time ten years have passed, and with one exception I have not put in a gold filling in my office.

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* A portion of a Paper read by Prof. Flagg before the Odontological Society of New York.

Now if I could not make that statement I would not be before you to-night. I would not be here to urge upon you once more a consideration of the peculiar tenets of the New Departure, which, contrary to the opinion of our mutual friend, Dr. Bonwill, has never, to my knowledge, been chilled by any "cold wave," but has, from its birth, increased grandly in its fair proportions, nurtured by most genial sunshine both professional and social. Efforts to impede its progress have indeed been made, but they have been swept away like mere straws in the path. The "trio" were "honest in their convictions," and honesty has proved itself a winning policy. The trio *never* has been in the least "discomfited." It *never* has been made to recant by modifying its creed. You all know, who know anything about the matter, that not one single jot or title of that enunciation has in these ten years been retraced in the slightest degree; but, on the contrary, I think I may safely assert that its influence has been shown in a modification of the practice of almost every dental office in the world.

Now again I refer to the tenet of the old "accepted creed" which says that gutta-percha properly used is an excellen temporary filling. That was the universal enunciation ten years ago. It is not now. There are many respectable gentlemen who now think—agreeing with the enunciation of the New Departure ten years ago—that gutta-percha when properly used is the most permanent filling-material that we possess.

"Just in proportion as a tooth *needs* saving, gold is the worst material that can be used." To-day that stands as solid as a rock. In proportion as a tooth *needs* saving,—not in proportion to the size of the cavity, not in proportion to the position of the cavity, but just in proportion as the tooth *needs* saving,—gold is the worst material you can use in it.

Here also gutta-percha stands, precisely as it stood then. Dr. Hawes, with whom I have stood shoulder to shoulder for almost fifty long years, came to Philadelphia ten years ago, because he had heard that I was going to say before your society that gutta percha was the most permanent filling-material we possessed if properly used. I showed him gutta-percha fillings that were seven years old, and one ten years old, which he pronounced very nice. I then showed him one fifteen years old; and finally I showed him a patient with a gutta-percha filling in the buccal face of a left lower molar. I said to him, "Observe the structure of that tooth and the position of that cavity. Do you see that the filling is good, that it is not much worn, and that it has preserved the tooth?" He said, "Yes, it is good, but it is somewhat cupped and would hardly pass for a permanent filling." I then said to the patient, "Madam, how long has this filling been in?" She said, "I don't remember whether it is twenty or twenty-one years." I then added, "When this filling has been in as much longer I am going to call it permanent." In eight years more that tooth became a little loose and the surrounding tissues irritated; the patient was sixty-five or sixty-eight years old, and in an anæmic condition, so it was not thought advisable to tax her system with any further attempt to continue the tooth in position, and it was removed. That tooth is in my collection at our college, and is one of my curiosities. The gutta-percha filling in it has a record of almost thirty years of what any of you would say was good service. The gutta-percha with which that tooth was filled was almost identical with the gutta-percha that I shall present to you to-night. The white gutta-percha shown to-night is a gutta-percha which was suggested by my friend, Dr. Ives, some months ago, who asked me why we could not make a white gutta-percha that would be somewhat tougher than the ordinary. I had abandoned the use of the old white gutta-percha for that of the ordinary base-plate gutta-percha. We next used cream coloured gutta-percha for cream coloured teeth, yellow gutta-percha for yellow teeth, and blue gutta-percha for blue teeth, and have done so almost from time immemorial. So it seems rather strange that I should have come on to-night to speak to you about no new things; and yet I will speak to you of a wide range of things, which although not in the least degree new are still not generally known.

As Dr. Bonwill well said recently when speaking of dentistry and its tremendous breadth, "Dentistry a specialty of medicine! Why, a part of medicine is a trifling specialty of dentistry." And so it is in all directions in our art, gentlemen. Not one little twentieth of the work we have in hand is known to one in twenty, or one in each two hundred, of the practitioners of dentistry! I appear before you as a *plastic specialist.* The results of my work are none the less beautiful and none the less satisfactory because I use no gold; they are none the less permanent because I use no gold, and they are none the less inexpensive because I use no gold.

My friend, Mr. Joseph Patterson—the same who spoke those thrilling words to your New York bankers in '61—sent me word not six little months ago that I had been one of the greatest comforts to him in his declining years. He came to me at the age of seventy-four, his teeth loose and aching. I used only plastic fillings. He died at the age of eighty-two, and had only lost one tooth in the whole eight years. Some of his teeth I joined by placing platinum bands around them, one strong tooth in the middle holding two loose and shaky teeth, one on either side. It has been said that teeth in this condition had better be extracted. Is it best? And if I do not know when it is best to extract a tooth I ask you who of you does? If the mending of such teeth can be made to give comfort and satisfaction, I say that the proof of the goodness of the work is in its usefulness.

So I appear before you to urge upon you the claims of gutta-percha, and to say that gutta-percha, when properly used, is one of the most permanent of filling-materials. By permanent I wish it to be distinctly understood that I do not mean that in any position, or in any condition and under all possible circumstances, gutta-percha as a filling-material is as persistent or as permanent as is gold, or tin, or amalgam. That is not the sense in which the word permanent should be applied. If a gold filling be introduced into a frail, ill-structured lateral incisor, by the hands of the best worker who ever handled a plugger, and decay comes all around it, and in three little years it drops out into the patient's mouth while masticating,—is that what you call a permanent filling, because everything comes out exactly as you put it in, although the tooth is almost ruined as the result of it? That is not what *I* mean by permanent. If, on the contrary, you take that same tooth and introduce properly a gutta-percha filling, which at the end of those same three years you find much disintegrated and worn away, and you remove the remaining portion of the gutta-percha, finding the cavity of decay practically as you had left it three years before, and then introduce another gutta-percha filling, thus placing the tooth in the same condition that it was before, plus the super-calcification of the dentinal structure,—I ask you which of these fillings, the gold or the gutta-percha, *deserves* to be called the more permanent? And if, still more than that, you place your gutta-percha, properly prepared, where little or *no wear* can come upon it, in such wise that you know, just as well as you know anything, that a zinc phosphate filling would not have lasted five years, an amalgam filling would not have lasted more than ten years, and that your gutta-percha filling might last fifteen years,—and is there one man here who dares say it would not,—then I ask you if gutta-percha, properly used, is not the most permanent filling-material we possess? We do not say that gutta-percha is the material which, if placed in all sorts of cavities, in all sorts of teeth, will make the best record; neither is gutta-percha the best material when you have anything else that you can rely upon; but in connection with certain cavities of decay, in certain teeth, under certain circumstances, it is the most permanent filling-material that we possess. And it is not *properly* used unless it is used as "the most permanent filling-material we possess."

Now, I will say that I did not need to be urged to come to speak to you upon this subject, because I wanted to place before you the claims of this material, a material which is so trustworthy and so capable of giving satisfactory results to yourself and your patients. I wanted to try once more to root out the idea that gutta-percha is good enough for temporary work and nothing more. I want to leave with you to-night the impression that you can work gutta-percha precisely the same as you work cohesive gold. It is worth the trial. It is well worth it. When you have a cavity *in which you should employ gutta-percha,* if you take cohesive gold, and with the rubber-dam keep the cavity perfectly dry, placing the gold carefully into it and condensing it there, thus making a piece of work which shall be a monument to your skill as a workman, you can in ten, or eight, or sometimes *five* years, in the vast majority of cases, pass a fine probe between the edges of the filling and the walls of the cavity, and oftentimes you can pass a blunt burnisher between them. You know this as well as I do. Have your gutta-percha tested, so that you know just exactly what it is composed of and the proportions of it. Any man educated in this can test it in ten minutes in his office. Can you? Can you? Can you? When you buy a piece of gutta-percha, can you in ten minutes test it and tell just the proportions of organic and inorganic matter, its heat-grade and tenacity, and just how it is is going to wear? I think you may safely say no. And yet you all ought to do it. You handle your gold, you roll your gold, and you test your gold, and then from that manipulation you say you don't like that gold: it works brashy, it does not adhere, it is not sticky, it does not pack as you want it, therefore it is not good. Do you know when gutta-percha packs well? When it makes you feel just as you do when you have made an elegant gold filling.

When I have made gutta-percha fillings in this wise I feel, as I have said, as though I had done something, and not that it is simply a temporary piece of work. I do not expect when a patient returns to me in three, or four, or five years to be able to run a probe round the margins and lift the filling out of the cavity; I except that filling will be almost or perfectly intact.

You know very well that I never make these assertions unless I have it in black and white on paper to show. I am altogether too careful for that. There are fillings made of Hill's stopping thirty years ago that are now in existence. I heard about a month ago of a patient who had a gutta-percha filling that Dr. Hill had introduced for him thirty years ago. And yet so meagre is our information that the last book on dental chemistry, published by Dr. Mitchell, of Chicago,—and it has received the indorsement of almost every dental faculty in this country,—states that Hill's stopping was made of gutta-percha, quicklime, and silex. We have known positively for a quarter of a century that Hill's stopping was *not* made of quicklime and silex; but we do not know what it was made of. So difficult is its analysis that we have not been able to say positively what Dr. Hill made his stopping of. And yet the last published book on dental chemistry states the same old story that was exploded twenty-five years ago.

They were told at the "First District" a year ago that the manner in which gutta-percha was made was to heat a piece of iron casting about the size of a raisin-box, upon which thin sheets of gutta-percha the size of that piece of iron should be placed, oxide of zinc being spread on the gutta-percha and rolled in with a roller. In order to prevent the material from sticking to the roller, a towel was to be placed between the roller and the gutta-percha. I say that a good gutta-percha stopping cannot be made in that way!

I would say in the first place that there is but one article that I have ever found that makes a good gutta-percha filling-material. I have two samples: one is a dark-coloured material and the other is a little lighter coloured; both pieces came from the same sheet, but they are tested by bending, thus. The dark-coloured gutta-percha is used for "high heat," and the lighter coloured for "low heat," gutta-percha stopping.

When the gentleman read that paper on gutta-percha, Dr. Atkinson is reported as having said that it showed great attention had been given to the subject. The fact is it did not show that any had been given. Dr. Atkinson thought he knew about it. He did not know anything about it. He said that gutta-percha had been presented not as a permanent filling-material, but as a crutch to help us over difficult places, and as such he indorsed it. I do not want it to be welcomed on any such terms as that. I do not want this material to be looked upon as a crutch. I wish it to be recognized as a reliable friend in need! I bring these samples to you to show you all the various steps in the manipulation of what I shall tell you of, so that you can follow it out for yourselves. I wrote to the gentleman who read that paper and told him that the statements in his paper were so strange that I almost doubted them, and I said I wished he would send me a sample of gutta-percha made after his fashion, in order that I might test it and see if good gutta-percha could be made in that way. He replied that if I doubted his assertion I would doubt his sample. Now, I don't reply in that way when I am asked a question. I am ready to substantiate my assertions at all times : my laboratory is open to all who wish to examine and test my work and see the things that I make. And that is the reason I am here : I want you to *know* something about this, and see what has been done and what can be done, and take for yourselves a "new departure" in this direction.

Now, this material is called gutta-percha ; it is obtained at Bishop's factory, within fifteen minutes or so from here. It is pure Para gum,—as pure and nice as can be obtained for the purpose of manufacturing. The second grade is this Para gum mixed half and half with a brown gum ; this is called gutta-percha II. It is an inferior grade. The third grade is a light gutta-percha that is made of one-half of this good gum and the other part is a good-for-nothing, soft, crumbly, white, miserable stuff that makes a good-for-nothing article for our purposes. If you wish to make a good gutta-percha of a light colour, it is necessary to mix with it oxide of zinc or sulphide of zinc, sulphite of lime, and various other materials. It is generally very largely pure oxide of zinc and nothing else, which makes an excellent material. You all know that sulphite of lime is recognized as one of the most reliable antiseptics, and consequently a little of it is added for that purpose. What makes our red gutta-percha so hard and tough? Is it the sulphide of mercury? Can anybody say what it is? I wish they could. We have nothing in the red gutta-percha but the sulphide of mercury and oxide of zinc. That makes very nice material ; but it is red ; you cannot put it, acceptably, in front teeth. Besides that it is "low heat;" it bulges in the mouth, or "time rots," as it is called, and wears out faster than this gutta-percha. So we mix with it a larger quantity of oxide of zinc to make it hard.

The only way for you to use gutta-percha successfully is to "test" the various materials before putting them into the mouth. The testing of the *value* of the various inorganics is the work of a life-time. I never expect to see the sulphides determined in connection with gutta-percha.

We have then this red Para gum as a material to start with. Again there is this curious thing of which I have spoken,—a thing which Mr. Bishop's men are unable to explain. From the same roll or sheet of gutta-percha you will get two or three different kinds or grades ; another kind will be best for low-heat gutta-percha, and the third kind we will have to throw away as refuse. I wish you would take this piece and bend it and see how springy it is. Now, take this piece, that is stiffer, although it is smaller. They were both taken out of the same roll. This is only about two-thirds as big and two-thirds as wide as the other, yet it is stiffer. That shows that every piece of gutta-percha that is made into filling-material must be tested first by bending and then afterwards by putting it to a heat test.

If you want to keep gutta-percha good you must put it into salt water and keep it there. I have now good gutta-percha that is eighteen years old. I made an experiment four months ago for the purpose of testing it before the class ; I took some of this eighteen-year-old gutta-percha that I kept in salt water and tested it, and it answered every test as well as the new gutta-percha which I had just obtained from Bishop's. You need not be afraid of gutta-percha stopping spoiling if "good" when bought. But gutta-percha in this shape, left to dry in the open air, becomes nearly worthless in the course of a year or two.

I have brought two samples of gutta-percha to show you to-night. One, the yellow, was made eight years ago ; the other is white and was made a few days ago. If you want a tough and tenacious material you must have a machine heated with a combination of dry and wet heat, gasoline being the fuel used. There is a large cylindrical vessel of water, upon the cover of which is a nickel-plated slab. The gutta-percha is placed on this slab, and is worked over by hand with a wedge-shaped plug attached to a strong rod arranged as a lever. It it the *only* way, so far as I know, in which it can be done properly. Rolling does it, but not as well. It has to be worked by hand, and requires great delicacy of manipulation and great strength. The gutta-percha being placed upon the slab, the handle is taken, and the powder added. by kneading. Oxide of zinc, sulphide of zinc, oxide of magnesia, sulphite of lime, and aluminum are among the best of the "inorganics." It is worked on for six or eight hours, and then is "toughened" by one or two hours more of kneading, provided you are going to make five or six ounces of gutta-perche stopping which is a good days work.

It is dreadfully hard and tiresome work. You see how beautiful the gutta-percha is when it is in a finished condition [showing sample]. It is almost as hard as a stone. It is then passed between rollers for the purpose of preparing the mass for ordinary use. Those rollers must be nickel-plated. We have to nickel-plate all the appliances which we use in working gutta-percha. It does not take so much kneading to make the white gutta-percha as it does the colouted, and as the white is the best, I accepted the suggestion of my friend, Dr. Ives, that we should go back to white gutta-percha. It is passed through the rollers and then cut up into little pieces and stamped "High Heat" or "Low Heat."

Now, gentlemen, you see why I told you in the beginning that I was not going to tell you anything that was new, but things that were not generally known ; that is all.

The coloured gutta-perchas are all medium heats. The white gutta-percha must be marked high or low, as the case may be.

I have brought all the appliances and instruments for introducing a filling to-night, and I will try to do that. But I will say in this connection that gutta-percha is a leaky filling-material. No gutta-percha filling that ever was made is a tight filling so far as I know ; and I have brought you all the various tests to show you. For these tests the gutta-percha is packed into a glass tube as hot as it can be borne in the hand, so as to expand the glass tube as much as possible ; then it is placed in another bottle so that the atmospheric changes cannot affect the experiment. No gutta-percha filling can ever be placed in the mouth under such favourable circumstances. Examination of these bottles will show you that they all contain leaky gutta-percha fillings. It took just one and a quarter minutes for one of them to leak. Here is one of red gutta-percha, which you see is a great deal more leaky than the other. The reason is that it has only three parts of inorganics. The red gutta-percha base-plate is the most leaky gutta-percha that we have. No filling in a tooth can be made with it that will not leak badly in less than five minutes. But gutta-percha is no less an "excellent" filling-material because it is the lowest in the scale of conductibility, and the lowest in the scale of irritability.

Amalgam permits moisture to do good! We recognize that fact, and therefore it is that amalgams that do not shrink are not as good tooth-savers as amalgams which shrink. The shrinkage of many amalgams nowadays is very slight. Some of the amalgams shrink and some do not. Some of the new amalgams wear better than the old. In five minutes you can tell whether an amalgan will shrink or not. In thirty minutes you can ascertain the composition of your amalgam. You may remember the evening that a few of us once spent in Dr. Lord's office, when we tried there a number of samples of amalgams, testing them for "quality," and there were only three out of all that lot which proved to be "good." We know that all "submarine" amalgams leak; we know that all the "contour" amalgams leak, and we know how much they shrink. A filling an *inch* in diameter shrinks just one-four-thousandth of an inch. We know that all do not shrink. All of the white amalgams that have from three to five or ten per cent. of zinc in them, when you come to make a filling *one and one-half* inches in diameter, do not shrink a particle. We know they do not shrink, but they do not save teeth. They will save teeth in a certain degree, but not as well as a leaky amalgam. We know these white front-teeth alloys will not save teeth as well as the dark-coloured amalgams will. Fifty per cent. silver, twenty per cent. gold, twenty per cent. tin, and ten per cent. zinc make a good "front tooth" alloy.

The heating of gutta-percha is all governed by your instruments. When the instrument handles are not warm the gutta-percha will not be soft enough, and when the instruments are just warm enough to work with nicety, the gutta-percha is just right. No matter how carefully gutta-percha if you put that gutta-percha into the naked flame of a spirit lamp there will be an undue amount of heat for the outside of the gutta-percha and an insufficient amount in the centre. We see the necessity, therefore, for a gutta-percha warmer upon which to heat gutta-percha. If it is high-heat gutta-percha it must be packed with a warm instrument, and it is much better to have the gutta-percha and the instruments all uniformly warmed and ready to take up, so that piece after piece can be properly packed. Such a gutta-percha warmer is a great saver of time and trouble, and I do not think I could dentally "keep house" without it. By placing the gutta-percha upon the slab you soon get the warmth required, and with a small probe you take up piece by piece and pack them into the cavity and work them into homogeneity with the warm instruments,—not with an idea that gutta-percha is good enough for a temporary filling, because with that idea you will not accomplish anything. Suppose you have prepared a cavity for making a gold filling, would you do the elegant work that you do if you proceed with the idea that it was to be only a temporary filling? On the contrary, as you place piece after piece in the cavity, you are well satisfied, and have reason to say to yourself that it is a grand, good filling, and will save the tooth and the pulp. Do you suppose if we put our gutta-percha fillings in in that way that they would be quite as temporary as some of them now are?

The instruments used are all of familiar shapes. They may be such shapes as we use for gold work, all serrated on the points. Certain ones are straight, others are the corkscrew-shaped instruments, rights and lefts; in fact, I can say nothing that comes nearer to the truth than that you should introduce gutta-percha exactly as you would introduce the pellets or pieces of cohesive foil, with the exception that gutta-percha does not require retaining pits. You require some little retaining points, but they are trifling. Gutta-percha adheres in a measure to the walls of the cavity. It shrinks enough to leak, and because it does we denounce it as front-tooth filling, unless the tooth is "lined" or varnished with some other material.

To finish fillings we use precisely the same instruments that we used in the days of Wood, when he had his fusible metal. His instruments were thin at the head and had a large solid base. These instruments when heated retain the heat for some time, and we cut off the superfluous material with them. You should have very little superfluous material in connection with an ordinary gutta-percha filling.

In answer to a question Dr. Flagg said, I don't think there is any difference between the saving qualities of high-heat and low-heat gutta-percha. The wearing is different. High-heat gutta-percha will outwear low-heat gutta-percha almost two to one. In filling soft and badly decayed teeth you want a low-heat gutta-percha first, in order to work closely to the pulp. I think good varnishing retards decay, but I here speak of it entirely with relation to discolouration, or "clouding," as it is termed. In placing gutta-percha in front teeth, which we did years ago more than we do now, we always varnished or lined the cavity with oxychloride of zinc if it was a vital tooth, or with zinc phosphate if it was a pulpless tooth. If anything can save the pulps in vital frail front teeth, gutta-percha will do it. If there is any filling in the world that will permit the continued life of the pulp in a soft tooth with the pulp almost exposed, it is gutta-percha. But if in spite of this the pulp dies—and wish the best gutta-percha work pulps do die—and the patient comes complaining of a tenderness about the tooth, and pulpitis is finally developed, you have a filling easy to remove and but a very little distance to go to get into the pulp-cavity and relieve the trouble.

There is leakage around a gutta-percha filling, and yet you can prevent the clouding of the tooth by varnishing the cavity before filling, and for that purpose I think the varnish suggested by my friend, Dr. Ives, is the best. It is made of virgin rubber, 30 grains, in half an ounce of chloroform ; gum damar and gum sandarac, each 20 grains, in half an ounce of chloroform ; dissolve and make an ounce. It makes a very strong solid, and somewhat opaque varnish.

Addressing himself to the question, of the shrinkage of a gutta-percha filling which necessarily admits more or less moisture tothe cavity ; and when moisture is so admitted, how do you account for the fact that disintegration of the tooth-substance does not ensue the same as it would if a gold filling leaked? the lecturer said : From the fact of the gutta-percha being an absolute nonconductor, the lowest material that we have in the tension scale of galvanic and electric action, and that, therefore, the chemical and concomitant action which takes place between the gutta-percha and the tooth-bone is restrained rather than permitted through the favouring influence of conduction. The only action that can take place results from the leakage of moisture, and it is not a great leakage, only enough to cloud the tooth. In that connection I think you will have to depend entirely upon Miller's bacteria to carry on the decay!

Dr. Flagg never uses matrices *for gutta-percha.*

Gutta-percha is not presented as a material suitable for all. sorts of cavities, but only those having circumscribed walls, —comparatively round, shot-hole cavities in the buccal, distal, and mesial surface of teeth, not on the articulating surfaces ; where the cavity is small on the outside and large on the inside, and where the tooth is soft, of frail structure and highly organic,—such cavities as would be prepared for gold fillings by cutting away all the surrounding enamel-walls until you get to strong walls,—in filling such cavities with gutta-percha you conserve the enamel-structure all that you possibly can. If the enamel-walls are so thin and frail that you fear their breaking away, then I would line them with either oxychloride of zinc or zinc phosphate. Vital teeth I never fill with zinc phosphate without full pulp protection. Fill them with nitro-phosphate if you want strength. When it is done then you finish up your cavity with a chiseled or burred edge, and you have no feather-edge to cut down to.

I want to induce you to try these things, for certainly you must understand that from such stand-points as I offer here to-night you *know* little about plastic fillings.

Gutta-percha in some cases "rots," and as it rots it grows spongy and takes in the fluids of the mouth. It breaks a tooth by being pounded upon. When a gutta-percha filling is so exposed that you bite down upon it, it is beaten down by occlusion, and if the walls of the tooth give way it is not by true expansion, but simply by pounding upon the gutta-percha. It is very necessary that the end of the packing instrument should not come in contact with the flame of the lamp. If it does, the touch of the instrument smirches the gutta-percha. The instruments must either be wiped off, or, better still, have the gutta-percha warmer so arranged that the blaze does not touch the points.

REFLECTIONS FROM THE SURGERY.

A Case of Œsophagotomy for an impacted artificial plate; Recovery; Remarks.

(Under the care of Mr. H. H. CLUTTON at St. Thomas's Hospital.

THE following case presents several points of interest, and is an example of an operation and the after-treatment required which from its rarity is seldom recorded. The shape and size of the plate made its detection with the œsophageal forceps difficult; it was probably flattened against the posterior wall whilst they from their curve passed in front of it. It will also be noticed that the length of incision required was unusually short.

A woman, aged thirty-nine, was admitted on April 28th, 1888, with the following history. She was in the habit of wearing a vulcanite plate, which carried one central incisor tooth, and was kept in position by two hooks. It had latterly been reduced in size by several small pieces having been broken off, and was consequently very easily displaced. Two days before her admission, whilst eating a hard crust of bread, she accidently swallowed the artificial plate She was unable to take any solid food afterwards, and could only swallow fluids, such as tea, with great difficulty and pain. On the advice of her neighbours she took castor-oil, but she did not consult a doctor before she came to the hospital two days after the accident Mr. Bidwell, the house-surgeon on duty, found on examination with forceps and coin-catcher, that the foreign body was fixed to the walls of the æsophagus opposite the cricoid cartilage, and that any attempts at drawing it towards the mouth caused such intense dyspnœa as to make it impossible to proceed, even if he had otherwise thought it safe to make any prolonged effort at extraction. The patient was therefore admitted into the hospital.

After the administration of an anæsthetic, Mr. Clutton introduced a pair of œsophageal forceps in order that he might be quite sure of the exact position of the foreign body. Again and again the forceps passed beyond the artificial plate without giving any indication of its presence. This was easily explained afterwards by the small size of the artificial plate, but at the time it gave the impression to the operator that the foreign body had passed onwards down the œsophagus. By external manipulation there was an abnormal swelling to be felt opposite the cricoid cartilage, and after several further attempts the foreign body was eventually caught by the forceps, but it was so firmly fixed that it was obviously hopeless to attempt its extraction through the mouth. The operation of œsophagotomy was therefore commenced by an incision two inches in length opposite the cricoid cartilage on the left side of the neck. After drawing the sternomastoid and omo-hoid muscles to the outer side, the carotid sheath came into view and was similarly displaced outwards by a retractor. The œsophagus was then seen at the bottom of the wound, and on introducing the finger one of the hooks belonging to the artificial plate could be felt protruding through the œsophageal wall. After an incision had been made upon the foreign body, there was still some difficulty in extraction on account of the hooks. This was eventually overcome by turning the plate round and disentangling one hook at a time. The superficial incision was not enlarged, as the difficulty in extraction was not due to the size of the plate. The wound in the œsophagus was then carefully closed with three catgut sutures, and a drainage tube being placed in the lower angle of the wound, the superficial parts were brought together with silk, and an antiseptic dressing applied.

From April 20th to May 8th she was fed entirely by nutrient enemata, and, as her chief complaint was then found to be that of thirst, from six to ten ounces of tepid water injected into the rectum in the intervals between the administrations of the nutrient enemata. She was forbidden to have anything by the mouth, and after the water had been given by the bowel she made much less complaint of thirst. But by May 8th she begun to get so discontented at being (as she called) starved that it was found desirable to change the method of giving her nourishment. She was therefore fed by an œsophageal tube from the 8th to the 15th, when, the wound being healed, she resumed the ordinary mode of taking food by the mouth.

On the day after the operation (April 29th) the dressing had to be changed on account of the quantity of the discharge. On the 30th the discharge was almost as copious and offensive, and left no doubt as to the fluid having come from the œsophagus. The dressing was therefore changed to warm boracic lotion every four hours. The discharge continued to be very copious and offensive till May 10th, when two large sloughs were removed from the wound. The skin also became excoriated. As soon as the sloughs were removed the wound quickly began to close, and was soundly healed by the 15th. The temperature rose to 101·4 deg. on April 22th, but after May 2nd did not reach beyond 98·2 deg., except on one occasion (the 7th), when it rose again to 100·2 deg.

The patient left the hospital perfectly well in every respect on May 16th.

Remarks by Mr. Clutton.—First let me thank Mr. Stubb, the house-surgeon to the case, for the attention and trouble which he took in carrying out the details of the treatment. Although the vulcanite plate was a small one, it was difficult to extract, the hooks being firmly embedded in the œsophageal walls. There is one other feature in the case deserving of notice. An attempt was made to close the wound in the œsophagus with sutures, in the hope that the whole wound might close by first intention; but from the nature of the discharge it is clear that this entirely failed, and the sloughs which were eventually removed must have come from the walls of the œsophagus. No suppuration, however, extended from the wound, which was soundly healed in a little over a fortnight. The method adopted in feeding the patient was of material assistance, in my opinion, in promoting this desirable result: for had any particles of food escaped from the œsophagus, some suppuration beyond the limited area of the wound might naturally have been expected.

TO PROTECT STEEL APPLIANCES IN THE MOUTH.

In using steel jack screws the corrosive effect of the oval secretions may be prevented and the screws nicely lubricated by immersing them in hot paraffine. This should be done every 3 or 4 days.—*Odontographic Journal.*

PERMANENT SUPPRESSION OF THE SALIVARY SECRETION.

The patient is a lady, aged sixty, very thin, of a nervous temperament, and enjoying fairly good health. She give the following history:—About ten years ago, when in apparently good health, with the exception of a nervous shock by the news of the sudden death of a friend. She awoke one morning with an intense dryness of the mouth and throat, which prevented her from speaking or swallowing, and caused a sensation of choking. She found relief by constantly sipping cold water, but the distress was so great that for some nights she was unable to sleep. The discomfort gradually abated, but the tongue and mouth have remained perfectly dry ever since. The tongue has now the appearance of a piece of dry raw beef. There are no signs of papillæ on the anterior surface of the tongue, but the circumvallate are distinguishable.

DARK JOINTS.

Dr. J. H. Bede makes some valuable observations on the above in the *Odontographic Journal.* He points (*a*) that the first cause is *not* rubber but wax, and (*b*) that by keeping the ends of the sections wet the wax can be kept out. (*c*) If wax does get on section grind it off, for it cannot be cleaned.

British Journal of Dental Science.

LONDON, JULY 16th, 1888.

THE "DEAD PAST."

WE publish in another column a letter from Mr. Felix Weiss to which we beg to draw particular attention; firstly, because we are always pleased to hear from Mr. Weiss, who is an old and honoured contributor to the Journal, and then because we desire above all things to have "straight talks" from straight men about the College of Dentists. The air is heavy with the sighs of those who seem to regard its possible resurrection as a panacea for all our evils: but as Mr. Weiss justly says, "its attempted revival would be a fraud." In this letter we are told that our leading article contains many inaccuracies; but after carefully reading Mr. Weiss' words, we fail to detect any evidence of such mis-statements, and we are quite prepared to substantiate everything which has been indited in our article. The statements were not made carelessly or from hearsay, but emanated from those who like Mr. Weiss remember the old rallying points, and are familiar with the history of the defunct College. Mr. Weiss, unfortunately, mixes up "Scio's" allegations, which he mildly calls misleading, but which we should designate by a stronger term with our statements, and so, probably, is led into the error of discrediting our remarks. Thus, he says, the statement, that the College of Dentists was suppressed is inaccurate, and Mr. Weiss is right. We insisted upon this point in our former leader, and went on to say that the College, "withered and died under the blighting influences of insufficiency and mismanagement"; a remark to which Mr.

Weiss takes great exception, and stigmatises as "unjust." Let us see his proof, let us hear where the injustice comes in. We find, however, no proof, but in lieu of this, two statements, one which is gratuitous and hardly relevent, that the College "did not terminate its existence until the profession obtained what the College most desired, a recognised degree and a suitable education for its students." We may remark that English dentistry as yet has no *degree*, it has a *diploma*. The other statement is that the executive of the College of Dentists gained the respect and the admiration of those who did not work in the same lines. Even here we grieve to have to join issue. Whatever may have been the respect and admiration which were felt, and they were richly and truly deserved, for the founder and original promoters of the College, yet as death and secession decimated its muster roll, like the traveller to Jericho it fell into evil times, and just missed doing a splendid work—the institution of the L.D.S. of the Royal College of Surgeons of England. Mr. Weiss is led into a most equivocal statement, which, although we doubt if he meant what he writes is nearer the mark than some other portions of his letter. His words are "had the council of the College been actuated by *selfish* or unworthy motives," [the italics are ours] "they could have rallied round them a certain number of staunch followers." They were, however, actuated by unselfish and worthy motives, and so the staunch followers kept aloof, and the College quietly died! Had the College accepted the resolution of the dental crux as it was presented at that time, and formulated by the Odontological Society, they would have promptly suppressed themselves, and joined hand and heart with that Society in obtaining the L.D.S. As it was they temporised, attempted an independent existence and fell into oblivion. The honourable course which Mr. Weiss rightly points out, was, that the College should seek only the advancement of the profession. But we submit this course was not taken by the College; they did not as a corporate body either assist the Odontological Society, or suppress themselves. We should be glad to learn what useful end the College subserved after the secession of the men who joined in promoting the Odontological Society? and if none, why in all conscience they still struggled on as a mutilated ghost of their former selves, and guided in the main by one who was not a dentist? In the suburbs one still may see massive brass erections, with the name of a dentist followed by the letters M.C.D.E.; but this does not tell highly in favour of the rank and file of the defunct college. Let our readers and Mr. Weiss not misunderstand us. To no one do we give more honour than the original promoters of the College of Dentists, but we fail to see that the tail, after the secession to the Odontological Society, did themselves or the profession at large any good in continuing to support an institution, whose aim had been realised, although not, perhaps, in accordance with its own scheme. With Mr. Weiss we are in the heartiest accord when he points out the utter folly, and even worse, the "fraud" of any attempt to revive the College of Dentists. We thank Mr. Weiss for his communication, and if we take exception to some of his statements, we trust that he, as one of the most active workers in the politics of the profession, will recognise that we are purely impersonal, and simply sail the editorial ship beneath our banner—"Independence and Liberality."

A Grievance.—We have received numerous complaints that clients of ours have sent advertisements intended for our columns, directing them to a firm in New Burlington St., which formerly published the "British Journal of Dental Science," and that instead of referring these advertisers to our present publishing house, the firm in question inserted the announcements in another dental journal with which they are connected. Now we have no doubt that this proceeding, which our correspondents stigmatise as sharp practice, is really the outcome of a mistake which has only to be pointed out to be corrected. We may at the same time indicate that Messrs. Segg & Co. are the firm who transact all our advertisements and to them all letters should be addressed.

DISTRIBUTION OF PRIZES AT CHARING CROSS HOSPITAL.—This hospital, which seems now quite welded into the Dental world, obtained the services of the Rev. the Master of Trinity College, Cambridge, as Chairman on the 29th, when the prizes were distributed. *We*, that is, the dental students, always shine upon these occasions, and *we*, the editor, are always delighted to see it.

THE NATIONAL DENTAL HOSPITAL.—The prize distribution by the kindly hands of Mr. Felix Weiss was a great success. The dancing which followed was fully appreciated by a goodly company.

POST GRADUATE COURSE AT THE NATIONAL DENTAL HOSPITAL.—Only those who were privileged to attend the lectures and demonstrations, can realise the thorough, efficient and able way, in which the course was carried out. The names announced included some of our best "workmen," and the high hopes and expectations of the originators of the movement were not doomed to disappointment. The course was most thoroughly successful. Mr. Willoughby Weiss demonstrations will we hope form the subject of a longer notice in our next issue.

THE DENTAL HOSPITAL OF LONDON.—The prize distribution will take place July 20th at the Hospital buildings in Leicester Square, where the Right Hon. the Earl of Lathom, P.C., will preside. It is proposed to commemorate the occasion by a conversazione, at which Messrs. Eric Lewis and Bertram will appear, and "make things pleasant." We have been catered for previously by the sub-committee, and as a rule they ensure a pleasant evening, nor does it seem likely the July 20th will prove less fortunate, although it is a Friday. We had almost forgotten a most important item in the Function, that Sir Edwin Saunders will receive visitors at 8 p.m.

THE ASSOCIATION FOR THE ORAL INSTRUCTION OF THE DEAF AND BLIND.—We are credibly informed that this is the month of July; we should hardly have believed it, as we have been wearing fur-lined overcoats and looking up our skates, to say nothing of having fires in all our rooms, save and except for the fact that every Institution, collegiate and eleemosyneal is having a distribution, or seeking for contribution, although the last complaint is like that of Mr. Pecksniff's "chronic." The prize giving of the Association for the oral instruction of the deaf and dumb was undertaken by Lady Dalby, and all who know her will agree that in no fitter hands could the pleasant duty have been committed. The Association in question, whose annual meeting was held before the distribution, is one of the best and kindest we know of; the good it does is incalculable. We hope if any of our readers ever can they always will lend it a helping hand.

"BUMBLEISM" RAMPANT.—At the last meeting of the Islington Board of Guardians a discussion took place as to the appointment of a surgeon-dentist for the workhouse schools. This step was recommended by the school committee; but the suggestion did not meet with the general approval of the board. One of the guardians raised the objection that it was "an entirely new departure," adding that "he should not be at all surprised if the next recommendation would be for the appointment of an aurist and chiropodist." Another astute guardian observed that "the next functionary required would probably be a French hairdresser for the inmates." These sallies of wit provoked much merriment, and in the end it was decided that the question should be referred back to the school committee for a further report. Whatever may be the result, there cannot be a doubt that the preservation of their teeth is a matter of no slight importance to pauper children. The rate of mortality among the poorer classes would perhaps be much reduced if more attention were paid to the condition of their teeth when young. The food they eat is as a rule of so tough and indigestible a character, that its proper mastication must be a work of extreme difficulty to those with defective, or, as is often the case, no teeth at all. The preceding account, taken from the *St. James' Gazette*, gives a fair idea of the idiotic trash which is talked at Guardians' Board Meetings. The gentry who wax darkly funny over matters of which they have not the faintest knowledge, are those who administer parochial charities. Heaven help the poor! Surely it is the unpardonable sin to be poor and needy!

REPLANTING.

The following is an abstract of a paper by Dr. Chisholm, in *Southern Dental Journal.* Only portions are abstracted which appear to be of special importance taken in conjunction with the notice by Drs. Heitzmann and Bödecker. A central tooth which for years had been the source of occasional trouble in spite of treatment was extracted. The root cleansed of membrane and thoroughly asepticized was immersed in a weak solution of carbolic acid and inserted ligated to adjoining teeth. The tooth reunited and remained well and useful for two years, then a small fistulous opening appeared. And what was more serious it was clear on tapping the tooth that it was completely united with the bone. The subsequent history of this tooth is interesting and of physiological importance. Some time after, the patient had the misfortune to break off the tooth. The broken crown was considerably absorbed about the cervix and under the gum a short way. It was found impossible to extract the root, and a plate was made over it. In some time the patient again appeared, no trace of a root was to be seen, and the alveolus was normally absorbed.

Abstracts of British & Foreign Journals.

DEUTSCHE MONATSSCHRIFT FUR ZAHN-HEILKUNDE.

TREATMENT OF PULPLESS TEETH.

By ANTON WITSZEL.

BEFORE antiseptic means were used in filling pulpless teeth, such operations were never successful unless the tooth to be filled was first drained, or when a fistula at the roots of such teeth remained open. The method recommended by Adolph Witszel of treating teeth with diseased pulps with 20 per cent sublimate solution when copperdam is used, is without doubt, excellent. After the pulp cavity has been filled as well as possible with this solution, one can boldly probe with a very fine probe down into the roots till the jaw is reached; to be entirely successful this is absolutely necessary. It is supposed so concentrated a solution would bring about great inflammation of the roots, but such is not the case. On the contrary, slight periostitis is by this means very quickly got rid of; in treating front teeth Herr Witszel prefers the use of concentrated carbolic acid instead of the sublimate solution. In all cases where one cannot make sure by probing whether the sublimate has penetrated to the roots, Herr Witszel advises the operation in the case of gangrenous pulps to be given up, for should any putrifying matter be left in, or under the stopping, the operation would be attended with great risk. Teeth where the pulp is diseased, as a rule, fall to pieces, and such are not worth filling, the extraction of such teeth is also attended with difficulty for owing to osteomyelitis they are unusually firmly set in the jaw. Herr Witszel, in extracting such teeth, excavates them first, to discover how firm a hold the forceps have. After boring the alveolar ridge with a cylindrical drill, a firmer grip of the root is obtained, and the tooth can be safely extracted. This is not a painful operation, and only requires accurate anatomical knowledge and a sure hand. Winkel's drilling machine hand piece may be used with advantage, and the teeth should be washed with a solution of sublimate of 1 in 2000, with which the mouth may also be rinsed. If an injection of cocaine is used the same antiseptic method may be used. It is also well always to use a new injection needle. Teeth with gangrenous pulps often have sharp edges which can be got rid of by removing the crown with the forceps, and polishing the remaining root stump. In this way putrid cavities may be got rid of, and thus other teeth are protected from infection. Herr Witszel strongly advises the removal of teeth with gangrenous pulps, rather than expose the jaw to danger by hermetically sealing them. Chronic infection, caused by teeth with diseased pulps is the consequence of acute osteomyelitis, but may also occur from other causes. A tooth with a gangrenous pulp being filled with the remains of food, the obstruction will often produce a swelling at the root. The secretion of pus which should escape through the pulp cavity must, if the tooth be stopped, pass through the root into the jaw, and produce acute inflammation and fever ; should the tooth not be removed, the pus will be pressed into the jaw, and at the best must end in a fistula of the cheek. Through the lymphatics the deleterious material from teeth with gangrenous pulps may be spread over all parts of the body, chiefly from the sub-maxillary region. As examples, Herr Witszel mentions cases from his own practice. Herr N——, aged 25, suffered for some time from a swelling resembling in form the crop of a fowl. This was caused by two roots of a lower right side molar, and after its removal the swelling disappeared. A second case was that of a clerk, 15 years old, who suffered from a swelling on the left side of the submaxillary gland, which increased continually. At first it was supposed the swelling was caused by a diseased tooth, the pulp of which was decayed and which was on the same side as the swelling. This, however, was not the cause ; but the trouble arose from a tooth with a gangrenous pulp in the upper jaw. At first the patient would not have it removed but when the swelling begun to break out in the lymphatic glands it was removed. After this the swelling gradually disappeared, but took six months to do so. It is well to use Dr. Witszel's method in cases where it is impossible to use the ordinary plan, or else protect the pulp cavity with a metal cup, and bore through the tooth after it is filled, so that an outlet is made for the pus to escape. In any case it is advisable to have the tooth extracted on the least appearance of swelling.

THE EXPEDIENCY OF RETAINING THE CANINES.

BY DR. BRUNSMANN.

IN speaking of the treatment adopted in the clinic of Albrecht in cases, when through insufficiency of room, the canine projected beyond the arch over the lip, Dr. Brunsmann says not a moment was lost in extracting, even before it was distinctly visible and when there was scarcely anything to lay hold of. Such a mode of treatment, was entirely contrary to his experience. The advantage of the treatment to which he had previously been accustomed in such cases, had been put to a practical test in the case of his own mouth. When compelled in the clinic referred to, to extract such a tooth, he was consequently by no means free from perturbation; the consequence of which was that the forceps slipped, and the gum was wounded. Usually speaking, such teeth are early extracted. Dr. Brunsmann sets his face against their being sacrificed unnecessarily. There are many reasons for his opinion which he sets forth for the benefit of his colleagues. A careful examination of the anatomical relations of the upper jaw, shows that in the perfectly normal development of the jaw, there is a more or less apparent protuberance in the alveolar arch in the direction of the position occupied by the canine; if not discernable in the tooth arch, it will soon be seen, if the alveolar process be cut through in a horizontal direction. This prominence is the natural result of the proportionately strong, thick and long root of the canine in process of development. There can be no doubt that the canines contribute much to the formation of the jaw, and, therefore, to the expression of the countenance; consequently, if wanting, the difference is more perceptible than in the case of the absence of the bicuspid. The canine is less subject to caries, hence its retention, upon this score alone, is desirable. About the 11th year, a period of active development sets in. At this time, says Dr. Brunsmann, the first molars are frequently carious. When the bicuspids are well developed, they stand pressed one against the other, and tolerably close to the small incisors. In such cases, when there is no room for the canine, it is beneficial to extract the molars, and so, by means of pressure from behind, force forward the bicuspids. But if the molar be sound when this development sets in, Dr. Brunsmann extracts the first bicuspid without delay. The canine will then without any external aid force its way through the pressure of the lips alone, and speedily fill up the gap. The correctness of this treatment, Dr. Brunsmann says, has been tested in his own case. When twelve years old, his father extracted the first bicuspid from both sides, soon after which, the canines were cut and occupied their normal position, which they still retain. This, and many other examples, met with in the course of practice, has induced in Dr. Brunsmann, the conviction that it is best to defer extraction as long as possible. The question ~~then arises~~ what course to pursue in such cases when the cutting of the eye tooth is retarded and the corresponding milk teeth remain over their usual period up even in some cases to the 20th year. Dr. Brunsmann's aim in all such is to retain the milk teeth as long as possible, sometimes this being practicable as late as the 30th or 40th year. He considers it exceedingly questionable that the extraction of such teeth would accelerate the cutting of the canines; much less call them into existence. In cases when through caries the extraction of milk teeth is rendered necessary, it has been remarked by him that the gap frequently remained from the 18th to 20th year without any appearance of the permanent canine. On the other hand, it has not unfrequently come under his notice that in cases when to avoid disfigurement, artificial dentures have been resorted to the canine has in a larger or shorter time say six up to 18 months made its appearance splitting the artificial piece through the middle. This circumstance, which Dr. Brunsmann has entered upon at some length in his "Reports upon the anomalies of the teeth," has led him to the conclusion that the pressure exerted upon the jaw has some sort of stimulating effect upon the tooth formation. Upon this account, he urges upon his patients the expediency of filling up any gap in the mouth, by the insertion of an artificial denture, more especially when the prominence in the gum, shows that the cutting the canine is imminent. In all such cases, the pressure exercised by the artificial piece must be of use. Then arises the question, what ought to be done when the canine is in the inner half of the arch. If it has room enough for normal development, the first thing to be done is to try to force it forward in the best way that the case in question admits of. In the event of there being an insufficiency of room, the teeth in the vicinity ought to be removed. There should be some good reason for sacrificing the bicuspid; still more for extracting the canine itself. Another advantage in retaining the canine is its use in connection with the artificial dentures to be inserted at a subsequent period. Not only does its presence indicate with precision to the dentist the right position for the artificial teeth, but what is still more important it facilitates to the patient the use of such dentures. The canines and lower molars give proportionally strong support for ordinary plates.

HERR VON BENSOW'S METHOD OF FILLING OF ARTIFICIAL TEETH.

By Gasta Hahl.

Herr Gasta Hahl speaks of a new method of stopping artificial teeth which he saw in Sweden during a summer visit to Stockholm, and of which he appears to think very highly. The method was suggested and practised by Herr Von Bensow, a dentist, and is recommended on account of simplicity. Up to this time it has been necessary to keep a peculiar sort of tooth with prepared cavities or else to use a diamond bore to make them. Such teeth are very expensive, and it is only occasionally that dentists can make the cavities in this manner themselves; also it is difficult to fill these cavities on account of the great brittleness of the edges. Another difficulty is the colouring of the artificial teeth in order to give them the appearance of naturally filled teeth. This colouring very soon wears off. For these reasons the filling of artificial teeth is rarely attempted among us.

By Herr Bensow's method, if the artificial tooth requiring to be stopped with gold filling, is placed near another artificial tooth on a caoutchouc plate, it is merely necessary to make a small hole in the side of the tooth, by means of an ordinary polishing stone. The tooth is now set with wax, fitted and the cavities filled with plaster of Paris. Afterwards the caoutchouc forms by vulcanising the back wall of the cavity till now wanting. A couple of incisions in the caoutchouc are now made with an ordinary base and the cavities filled. If the tooth to be filled is one that has been soldered, as for instance, a pivot tooth, the incision is made in the same manner as above, but the porcelain plate is made in the usual manner. This will form the back wall of the cavity. In order to give a firmer hold for the filling it is best to roughen that part of the cavity which is towards it. When the tooth stands alone on a caoutchouc piece, a protection plate is used to give it necessary solidity or firmness, and it is treated in the same way as a soldered tooth. In this manner any tooth may be filled, and the filling placed on the exact place the patient desires or the operator deems best. If this manipulation is merely to deceive the eye, and give a natural appearance, it will do quite as well to use an amalgam stopping at once. Herr Bensow considers that for appearance gold filling is better than any other, but he draws attention to the necessity of care in not making too large a cavity as the stopping appears when held in the hand, so much smaller than when placed in the mouth.

WESTERN DENTAL JOURNAL.

PATHOLOGY AND THERAPEUTICS OF THE FIRST DENTITION.

By Dr. T. M. WYATT.

WHEN the outer wall of the bony cell nearest the overlying stratum of gum is partly absorbed, the tooth makes a rapid effort at eruption. But in its progress it is impinging upon a structure, the gums, which, normally quite tough and senseless, becomes by irritation very sensitive; here is the commencement of a more or less pathological dentition. The edge of the growing tooth becomes a mechanical irritant, and soon induces determination of blood to the irritated gum structure. Throbbing and increased sensation are the concomitants of this condition, and thus, without "external redness and tumefaction," the infant becomes uneasy and troublesome; the irritation not removed leads to "congestion" of the part first irritated together with further determination of blood to the surrounding tissue. Dull, constant pain and swelling. This swelling of the gum structure causes greater pressure upon the growing tooth which, in turn, re-acts upon the parts forming about the apex. Hence a serious complication, a greater flow of blood is induced where increase of blood will tend to produce more rapid formation of teeth ; it is now that the irritation of the sensory nerves of the teeth, which are nutrient fibres to the salivary glands, cause increased flow of saliva. If not relieved, inflammation of the gum, together with irritation of the dental pulp, follow. Then the gums become red and tumefied. It seems strange that blood-letting and removal of pressure by "lancing the gums" should ever have its power denied. If a lip be cracked in cold weather and it heals, where will it be most liable to crack again? The experience of all, who have any, is that it separates in the same place. We would ask : If, in any surgical operation, the pins or adhesive strips are prematurely removed and solution of continuity takes place, where does this occur ? Experience teaches that it is invariably at the edge of the wound, that it is the newly formed tissue that first yields. Believing, then, as the result of some experience, that the early lancing of the gums, when the indications point to the advisability of, or necessity for, the operation, affords relief as well as means of saving life, it is now in order to speak of the objections to it, the difficulties encountered in its performance, and the specialist's method of doing it. In addition to the widely disseminated idea of the increased difficulty of erupting teeth as the inevitable result of the "hard seam" left from lancing, we have the natural dislike upon the part of parents and nurses to the infliction of suffering upon infants. For the most thorough attainment of the desired end an incision should be made parallel with the edge of the advancing tooth for the incisors, and a crucial incision over molars and cuspids. The writer recommends a very free use of the lancet.

CERVICAL WALLS.

By Dr. W. M. Shirley.

It is a very usual and common thing for our patients to ask, "What caused that tooth to decay around that filling ?"

The answers can be many, and the causes as many as the answers. A few of the many causes are, not being careful enough in the preparation of our cavities; not making separation enough so as to work well and be self-cleansing, foreign substances will accumulate and cause fermentation, which produces decay; the failure to use rubber dam soon enough; cohesive gold and too much malleting, which are the chief causes. You can adjust the rubber dam first, or you can make part of the separating and then adjust it, but do not think of working with the cavity full of saliva. In making the separation do not leave the edges too thin. Remove all chalky substance; bevel the edges so that the gold will finish accurately to the edges, then polish the edges of the cavity, which is one of the most important things to be done, but very difficult to accomplish; but it can be done. After gaining your separation, use care in preparing your cavity. Make the walls smooth and make slight undercuts, but above all, do not cut deep retaining pits. After the cavity is prepared, walls made smooth, and the separation is ample, he recommends that all cavities be commenced either with tin foil or soft gold. Tin foil he thinks is good, but not better than soft gold. But he recommends to use tin every time instead of annealed gold, usually filling the cavity one-third full of soft gold. We sometimes have trouble in doing this but we find the matrix a great help, making four walls and rendering it quite easy for us. He finishes with cohesive foil and mallet until the filling is complete. If you use tin, fill it up part way and then use cohesive foil and mallet, but be very careful that you burnish the tin foil down smoothly. There is another advantage to be gained by using soft foil; it is more easily finished than cohesive. In finishing fillings we should be very careful to make them smooth and to put on a polish, so as to compare with the natural tooth before it was decayed.

Dental News.

ACTION AGAINST A DENTIST: IMPORTANT TO WEARERS OF ARTIFICIAL TEETH.

At the last sitting of the Tunbridge County Court, before Hornersham Cox, Esq., judge, the case of Sarah Jane Moon v. J. C. Leach was heard, being an action to recover five guineas, the value of a set of false teeth, alleged to be worthless, and four guineas damages for inconvenience and expenses.

Mr. C. E. Warner, solicitor, appeared for the plaintiff, wife of a miller's loader, at Hadlow, and Mr. Wardley, solicitor, was for the defendant, a dentist, of Tunbridge.

Mr. Warner, in opening the case, which excited considerable interest, said he did not wish to disparage Mr. Leach, but he thought, he should be able to prove he had taken advantage of a poor woman, and that if he liked to take a small fee he was bound to do his work properly. He then called

Mrs. Moon, the plaintiff, who said that about the beginning of January, she took a set of false teeth, which had been made for her by Mr. Bell, of Tunbridge Wells, to the defendant, and asked him if he could make an improvement in them that she wanted. He told her he could make her a new set for five guineas. She told him that it was good work, and she did not want worse ones. He replied that it was none of the best of work, and he would make her as good a set for five guineas. She told him it was good work. She did not expect as good work for five guineas as what she paid 7½ guineas for, but she accepted the offer and defendant took a model of her mouth, and said he would warrant the teeth; she called twice to have the teeth tried. A fortnight afterwards, she went with a Mrs. Russell and brought the teeth away in her mouth. Defendant said he would warrant them for twelve months and that she could wear them for twelve years. She tried them for a few days and found they were not comfortable, as they extended too far along the jaw, so as to cut the inside of her cheek. She told defendant this, but he refused to look, and said they only wanted perseverance. She produced the teeth and said that after a short time the vulcanite chipped, and she asked defendant to smooth the chips or stop it, but he refused to do it. She paid £5 5s. on that day, but on getting home she found he had written on the receipt "on account." As the defendant had not been civil to her she got her husband to call, and when he asked defendant what he meant he crossed the words out. The teeth were still uncomfortable, and subsequently the vulcanite broke in two, as there was no strengthening band. She had had some experience in cleaning teeth. She was cleaning the teeth when they broke. She called on defendant with Mrs. Russell and asked him why they had broken, and told him there ought to have been a strengthening band. He then pushed the teeth back into her hand, and said that she was telling him what to do, and said she had better do them herself, and called the servant to show her the door. Mr. Hinton, dentist, of Maidstone, mended the teeth for her, but they broke again. She could only masticate on one side of her mouth, as the teeth were too long on the other side. She kept the top set in for the sake of speaking. Mr. Leach did nothing to her mouth. She now had a set made by Mr. Hinton, which were very comfortable.

Cross examined by Mr. Wardley :—She had ceased to use her top set about three weeks. The teeth were put in in the middle of January, and she only ceased to use the top set about three weeks. She did not complain to Mr. Bell, who made the first set. Defendant told her he did not want her name on his book as when a patient took her case in her own hands and wanted to dictate success was impossible. She wanted Mr. Leach to make an alteration in the bite of the teeth made by Mr. Bell and he said he could do it and make as good work as that for five guineas. Mrs. Moon showed defendant Mr. Bell's letter, and he advised her to send the teeth back again. When the teeth were first fitted they were not comfortable, and she told him she was afraid they were too large, but he said they were not. At the time she paid she asked him to grind a little off one tooth, and he said they were all right. She did not say when she paid the money the teeth were comfortable and that she was satisfied. The set broke in her hand and she had not dropped them at any time.

Re-examined the witness said she went to Mr. Leach once or twice to get the teeth mended, and she paid the money under pressure as he was in a great temper, and said if he booked them the price would be seven guineas.

Mrs. Ann Russell, of Golden Green, gave corroborative evidence and said she heard plaintiff tell defendant the teeth did not fit very comfortably, whereupon he replied that they only wanted perseverance. When the teeth broke Mr. Leach refused to mend them.

Cross examined by Mr. Wardley: Mrs. Moon said the teeth were made of paltry stuff, and wanted a strengthening band, and then defendant said Mrs. Moon was to mend them herself.

Mr. Edwin Henry Hinton, surgeon and dentist, of Maidstone, was next called and said that plaintiff brought him a set of teeth to look at. She tried the teeth in her mouth. and they certainly were not a satisfactory fit, they rocked in the mouth and he should not like a set like them to leave his establishment. The teeth were what was known in the profession as "diatoric" teeth, and were made out of a kind of porcelain. "Pin" teeth were much better (He produced specimens of both for the inspection of the Judge. He had diatoric teeth which his apprentices practised upon. Except in case of back teeth he never used them, and then only the best, which cost 60 per cent. more. He had made a set of teeth for Mrs. Moon. Those made by Mr. Leach he did not put in his model. The vulcanite was very good. Either the model was badly taken, or they warped in course of manufacture, which frequently occurred in the manufacture of teeth.

Cross examined by Mr. Wardley: The teeth in question were not of the slightest use to Mrs. Moon. He told her they would be useless, but she *would* have them mended. He had had fourteen years experience as a dentist. He had no fault to find with the vulcanite except that it was rather too brittle. He never used diatoric teeth for the front teeth.

Re-examined by Mr. Warner: One could not afford to put "pin" teeth in a five guinea set. In the set he made for plaintiff he used diatoric teeth at the back and pin teeth in the front.

Mr. George Henry James Rogers, a registered dentist, of Maidstone, was also called as a scientific witness, and deposed that from what he saw of the teeth in Mrs. Moon's mouth, he should say that the set made by Mr. Leach were worthless, as they certainly did not fit. He should say, comparatively speaking, the difference in the quality of the teeth was about the same as between an ordinary jam pot and good china.

Cross-examined by Mr. Wardley. He used the very best class of "diatoric" teeth for back teeth only. Those produced as used by Mr. Leach were of the very commonest description. He had seen a great deal of Mr. Hinton's work, and he might have mended one or two of Mr. Hinton's pieces. The vulcanite used in this case was "over cooked," and that made it very brittle.

Mr. Wardley then addressed His Honour, remarking that the case was of very great importance to his client, against whom serious charges had been made. It was one of two things; either his client was a swindler or a very incompetent dentist. He then called

The Defendant, who said, he was in practice at Tunbridge and Sevenoaks, and had had a wide experience during the last sixteen years. When Mrs. Moon came to him she wanted an alteration made to the teeth supplied by Mr. Bell, and he told her it could not be done without knocking the case to pieces. She ultimately decided to have a new set. When they were done plaintiff said they looked very well, and were quite comfortable; but when she paid for the teeth she said one side projected too far into the jaw, and began to dictate to him the same as she did to Mr. Bell. He saw no more of her until the plate broke; and then she said they wanted strengthening; the material was rotten, and the workmanship bad. He called a servant to show her the door. If she had not acted as she did he should have mended the plate gratuitously. The vulcanite was "cooked" at the usual temperature of 315 degrees. The case could not have been broken by fair wear. He used diatoric teeth in sets more expensive than these. It was nothing new for one man to run another man's work down if he thought there was a chance of getting a job. (Laughter). If the case had "rocked" he should have considered it a misfit.

His Honour, in giving judgment, said he was of opinion that the plaintiff had not made out her case, and he should give judgment for the defendant. The law was entirely against her on the principle known to lawyers as *caveat emptor*. As charges had been made against the defendant he would give the grounds of his decision. The law was clear that where a person had the opportunity of seeing an article he was purchasing and there was no concealment, and he bought and paid for it, he was bound by his bargain. He might have stopped the case when the plaintiff's side closed, but the defendant being a professional man the case might have had serious consequences to him, and he considered that it was best to let him have an opportunity of giving an explanation. That explanation had been to his mind very satisfactory. Then there was the further fact that plaintiff used the teeth for several weeks without any complaint, and if they had been useless it would have only been reasonable if she had at once said she could not wear them at all. In his own experience and the experience of his friends he knew that it was almost impossible to get a set of teeth put in without some discomfort. The mouth was so formed that the slightest variation of the model produced discomfort, and a person had to put up with that discomfort. He had had during the past few months four cases of the same kind, of complaints against dentists, and this was the only case tried without a jury. His Honour then gave a verdict for the defendant with costs.

The case excited considerable interest, and His Honour's decision is viewed as an important one among the members of the profession in this locality.

A CLERK OF THE DENTAL ASSOCIATION IN COURT.

Anthony *v.* Anthony and Clifford.

Divorce Division. (Before Mr. Justice Butt and aCommon Jury.

This was the petition of the husband, an advertising agent, for a divorce by reason of the misconduct of his wife with the co-respondent, Mr. George Clifford, a clerk in the employment of the Dental Association, against whom damages were claimed. Both the respondent and the co-respondent appeared, but did not plead, and the suit was practically undefended.

Mr. M'Call appeared for the petitioner, and Mr. H. B. Deane for the respondent.

The marriage took place on November 1, 1873, at St. John's Church, Clapham, and there were six children subsequently born, five of whom were now living. In October, 1873, the co-respondent, a friend of one of the sons of the petitioner, visited the house, and owing to his intimacy with the respondent he was requested to discontinue his visits. On January 8 last Mrs. Anthony left home, and did not return till the following morning, when she stated to her husband that she had been staying at a friend's house in Shepherd's Bush. About a fortnight later she left home, and the following day her husband received the following letter from Clifford; "Mr. Anthony,—Sir—By the enclosed bill (an hotel bill from the London Bridge Hotel) you will see that there now remains nothing but for you to act promptly, as you readily understand that I hold Jennie's (the respondent's) honour in my hand." The petitioner afterwards caused inquiries to be made, and ascertained that on the night she was away she stayed with the co-respondent at some apartments in Faroe-road, West Kensington, and that subsequently they lived together as man and wife in Worlock-road, Paddington, passing by the name of "Mr. and Mrs. Clifford."

Mr. Justice Butt, in directing the jury, said that there was no evidence as to the co-respondent's age, but, judging from the photograph which had been put in, he was a very young man. That, however, did not matter, for he had broken up a home in which there were five children, the oldest of whom could not be more than fourteen, causing a serious injury to the petitioner, and the co-respondent must be made to pay for it. In a case of this sort the injury was all the more severe when the co-respondent had come by invitation to the petitioner's house.

The jury found for the petitioner, and assessed the damages at £400.

Mr. Justice Butt, in granting a decree nisi, with costs, directed that the money be paid into court within a fortnight. —*Daily Telegraph.*

Review.

Irregularities of the Teeth, and their Treatment. By Eugene S. Talbot M.D., D.D.S., (London : H. K. Lewis)

The subject of Dental Irregularities,--even when confined to irregularities of position,—is a large enough one to deserve a book to itself; and a comprehensive, well-arranged, and well-written book under such a title would be of great value. Dr. Talbot's volume aims at being such a work; but we cannot say that it is successful, for whilst there is much in its 160 pages that is good and suggestive, yet, taken as a whole, its contents do not, in our opinion, merit the use of the adjectives—comprehensive, well-arranged, well-written.

Concerning the descriptions given of the various forms of irregularity,—they may be said fairly to cover the ground, though more space might well have been given to the consideration of misplaced canines, and though something more than an indifferent sentence is due to a deformity which, though often overlooked, is one of considerable importance inasmuch as it generally results from unwise operative measures,—we refer to the displacement of the median line, caused, nine times out of ten, by one-sided extraction.

Except for a want of method which detracts not a little from their value, the sections devoted to etiology are good.

As for the chapters on treatment, we must confess to considerable regret that a writer so well acquainted as Dr. Talbot appears to be with the subject, and so ready and sensible in his views,—should not have turned out better work. In the first place, instead of taking up one by one the different kinds of deformity in order to show the treatment required, and the modes by which such treatment might be applied, the author describes *seriatim*, many varieties of apparatus, and gives cases in illustration—in illustration, that is, not so much of the way to deal with certain deformities, as to explain the use of appliances. It is as if the chapters in a work on operative surgery were arranged under such headings as "The Scalpel," "The Lithotrite," "the Aspirator"—with cases to illustrate the use of such instruments. Need we say that such a way of approaching the subject is neither scientific not surgical. In the second place, there is little or no comparison or discrimination made between the various systems of treatment described, no pointing out of the value of this or that method under varying circumstances, such as one is justified in looking for in a work which, according to its preface "is intended to embrace all that is necessary to a clear and practical understanding of the etiology and treatment of dental irregularities." In the third place, there are, under this head of treatment, serious omissions. Nothing is said about the use of broad rubber bands in the treatment of projecting incisors, nothing is said about compressed wood, or about immediate torsion, or about Balkwill's admirable method of rotation, nor is there any word about raising and "jumping" the bite, whilst the use of platinised gold, employed so often with great success, is distantly referred to in a single sentence.

Such defects, and there are others besides those we have mentioned, render the book before us sadly incomplete. We should like to suggest, that if a second edition should be reached, great improvements and additions might be made without seriously increasing the size of the volume; for the first 25 pages might with advantage be dispensed with, containing as they do the baldest statements of anatomical facts, which, set down without the slightest reference being made to their bearing on irregularities, might just as well have remained in the anatomical works from which they were copied.

We have said quite enough to explain our reasons for placing this book below the first rank; we should be sorry not to point out that there are a number of good points about it. The sound sense and practical suggestiveness of the author are to be commended—that is, in those few passages where he writes as an author, and not as a compiler. For example, we may instance the importance which is properly attached to a careful study of the articulation of the upper with the lower teeth,—the moderate and sensible way in which timely and judicious extraction of permanent teeth is advocated as a means of regulation in certain cases,—and the repeated urging of the frequent necessity for prolonged use of retaining plates. Valuable and novel to many will be the author's ingenious devices made out of piano-wire, and likewise his combinations of screws and wedges. These methods, together with several others which appear for the first time between the covers of a book, make the volume well worth attention.

The illustrations, profuse in number, are variously good or bad. Many of them will be recognised as old acquaintances by the readers of Kingsley's "Oral Deformities," and the "Dental Cosmos."

As for the English of the book; while laudably free, for the most part, from verbiage and ambiguity, it is absolutely devoid of any literary style; signs of hasty and careless construction too, are not wanting, with the result that every here and there one finds a meagreness and a want of orderly sequence which weaken the force and even obscure the meaning of not a few passages.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

THE LATE COLLEGE OF SURGEONS.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,

I did not think that I should again be called upon to refer to the last days of the above named College, but your leading article contains so many inaccuracies, and "Scio's" remarks are altogether so misleading, that I feel bound, in justice to the memory of "those good men and true" who assisted at its foundation, and remained with it to the closing hours of its existence, to pen this explanation.

The College of Dentists was not "suppressed," nor was it "abandoned," for it had a good list of members when the council agreed to the terms of amalgamation with the Odontogical Society, and through that society, with the College of Surgeons. The succession of certain members did not cause the College to close its doors—they would most likely have been open to this day, had *the College of Surgeons not thought fit to institute a curriculum and give the Dentist a certificate of fitness to practice his profession.* From the first, the executive of the College hoped to be able to obtain a charter, but when this was found to be impossible—a chartered Institution having already taken the Dentist under its wing, and many of the leading members of the profession approving of this proceeding, the only honourable and patriotic course to pursue was to join the Institution already in existence and unite with the Odontological as a scientific society.

Had the council of the College been actuated by selfish or unworthy motives they could have rallied round them a certain number of staunch followers, but without a charter of incorporation they felt that they could not present themselves as a legally organized Institution, and as the benefit and advancement of the profession was their only aim, but one honourable course was open to them, preferring, as you have stated, their profession to party. To say that the College "withered and died under the blighting influences of insufficiency and mismanagement," is most unjust. It did not terminate its existence until the profession obtained what the College most desired—a recognized degree, and a suitable education for its students. Its management could hardly at any time be called into question, for its executive worked with a will and an enthusiasm which gained for it the respect—the admiration, I might say, of those who differed from it in its principal aim—the founding of an independent Institution. Without a Charter no such College could at the present day exist. Its attempted revival would be simply a fraud, and a Charter could not be obtained so long as the College of Surgeons is in existence, and particularly while it is doing the work it has so loyally carried out.

Yours, &c.,

FELIX WEISS.

Montague Place, W.C.

Hospital Reports.

Monthly Statement of operations performed at The Dental Hospital of London, Leicester Square, from June 1st to June 30, 1888 :—

Number of patients attended		
Extractions	Children under 14	391
	Adults	1126
	Under Nitrous Oxide	708
Gold Stoppings		451
Other Stoppings		1181
Advice		133
Irregularities of the Teeth		151
Miscellaneous and Dressings		435
Total		4576

JAMES F. COLYER, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, Leicester Square, from June 1st to June 30th, 1888 :—

Number of Patients attended		2076
Extractions	Children under 14	315
	Adults	545
	Under Nitrous Oxide	886
Gold Stoppings		138
Other Stoppings		753
Advice and Scaling		603
Irregularities of the Teeth		241
Miscellaneous		358
Total		3839

FRANK LANKESTER, L.R.C.P., *House Surgeon.*

VACANCY.

Birmingham Dental Hospital 71, Rewhall Street. The Post of House Surgeon is vacant. Applications to W. A. Addinsell 16, Bennetts Hill, Birmingham.

To Correspondents.

1. Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices 289 & 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.
2. We cannot undertake to return communications unless the necessary postage stamps are forwarded.
3. It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.
4. All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs J. P. Segg & Co., 289& 291, Regent Street, London, W.
5. The Journal will be supplied direct from the office on PREPAYMENT of subscriptions as under:

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Communications have been received from:—

Mr. Lankester, London; Mr. Klugh, London; Mr. Felix Weiss, London; Mr. Willoughby Weiss, London; Secretary Charing Cross Hospital; Secretary National Dental Hospital; Secretary London Dental Hospital; Dean London Dental Hospital; Secretary Association for the Oral Instruction of the Deaf and Dumb; Secretary Glasgow Dental Students' Society; Mr. James F. Colyer, London; Mr. Addinsell, Birmingham; Mr. Howard Marsh, London; Mr. George Seymour, London; Mr. Campbell Williams, London.

BOOKS AND JOURNALS RECEIVED—

Western Dental Journal; Dental Cosmos; Independent Practitioner; British Medical Journal; Medical Bulletin; Nursing Record; Dental Review; Southern Dental Journal; American Journal of Dental Science; L'Art Dentaire; L'Odontologique; Pharmaceutical Journal; Chemist and Druggist; Ohio State Journal of Dental Science; Items of Interest; Archives of Dentistry; Dental Reform; Monatsschriff f. Zahnheilkunde; Correspondenzblatt f. Zahwartz.

British Journal of Dental Science.

No. 493. LONDON, AUG. 1, 1888. VOL. XXXI.

THE COMMENCEMENT OF MALIGNANT DISEASES OF THE TONGUE, JAWS, AND MOUTH.

By FRED. BOWREMAN JESSETT, F.R.C.S., Eng.
Surgeon to the Cancer Hospital.

THERE are few diseases of more interest to dentists, and none of more importance to recognise quite in their early stage, than malignant disease of the jaws and tongue. It is often that the dentist is consulted on account of a small ulcerated spot on the tongue, caused by the rough edge of a decayed tooth. How important for the patient that the true character of this ulcer should be recognised; and yet, how frequently do cases present themselves in which the dentist has been satisfied to extract the offending tooth, and taken no heed of the ulcer. The patient leaves in the fond hope that now that his tooth has been removed, the ulcer will speedily heal. Alas! how often is this expectation found to be delusive, and after wasting some weeks, and finding matters becoming worse instead of better, the patient consults a surgeon who dashes all hope to the winds, and informs him he is the subject of cancer of the tongue, and that half or the whole organ must be removed; frequently, glandular mischief has by this time set in, and what might have been a simple and slight operation if the disease had been recognised in its early stage, becomes a most severe one; and possibly even after the whole organ is removed the disease is not cured, but speedily shows itself again in the glands of the neck.

The same truths apply to malignant diseases of the jaw. A patient applies for slight irregularity of his teeth, which has caused him some annoyance, and although he only recently noticed it, the trouble increases daily. A tooth, most frequently a molar, is observed to be pushed down so that it is longer than the others preventing the patient from shutting his mouth perfectly and masticating his food; possibly there may not be very much pain—unless the patient bites on something hard, when he may experience severe pain at the root of the tooth, shooting up to the cranium, which lasts for some time. The tooth to all appearance is sound, but rather loosened. The dentist extracts the tooth and discovers at the end of one of the fangs a spongy growth, very similar to ordinary granulations, the result of abscess. There is, however, no pus, but bleeding is pretty free. The cavity is plugged, possibly with a little cotton wool, and the patient departs thinking his trouble has ended with the loss of his tooth; the cavity, however, does not heal, and a fungus kind of growth protrudes. He again consults the dentist, who, if he recognises the serious nature of the case, at once sends him to a surgeon; otherwise, and I think too often, the disease is treated lightly, the growth is cauterized and the patient assured it will soon be all well. This growth, however, now commences to grow pretty rapidly, a surgeon is consulted, sarcoma recognised, and a portion of the jaw removed, and if seen early enough the patient makes a good recovery. Had the importance of the case been sooner recognised, very probably by freely removing the alveolar process of the jaw the disease might have been eradicated.

From what I have said, then, I am sure the importance of being able to recognise these cases in their earliest stage cannot be over estimated, and I venture to think that the few remarks I purpose to make may be of service to those gentlemen, who, in the exercise of their profession, unquestionably are often consulted on account of affections of the teeth, which in reality, are the consequence of some deeper seated disease.

I will commence by saying a few words on malignant diseases of the jaw, which are so often unsuspected by either dentist or patient; the patient merely noticing at the early stages little pain or inconvenience, but often quite sufficient to warn him that something is not quite as it should be, he, therefore, seeks the aid of the dentist, who, finding the tooth complained of quite sound, refuses to remove it, or to think in any way seriously of the case, orders a little mouth wash, gives possibly a tonic and tells him he will soon, by improving the general health, get rid of the pain. The pain, however, does not go, and again the patient repairs to the dentist, who now at the earnest solicitation of the patient, extracts the tooth; and he then discovers things are not quite in their normal condition. Notwithstanding the tooth has gone, yet the pain continues much the same, if it be the lower jaw the bone becomes somewhat enlarged and tender to the touch ; there is a constant discharge from the cavity left by the extracted tooth, the gum around begins to look unhealthy and granulations sprout up in the cavity, the jaw becomes more and more enlarged, the pain increases, the pulpy mass often bleeds, possibly the submaxillary glands become enlarged, sarcoma is recognised. Half the jaw is excised and the patient recovers, often, however, only speedily, to become the victim of a recurrence of the disease. Death quickly following, partly from the patient being unable to take nourishment, and partly from infiltration of the disease in the surrounding tissues, and possibly secondary deposits in distant organs.

Now, had this disease been recognised in its early stage, probably this patient's life might have been spared by the timely interference of the surgeon. How, you will ask, is it possible to recognise this disease at its commencement? Truly the diagnosis is most difficult and often impossible. Yet there are a few important factors in such a case that might well make one suspect malignancy.

The diseases which attack the jaws, and which so often come under the notice of the dentist, probably quite at their commencement, are epulis, epithelioma, and sarcoma, both spindle and round celled.

I will notice, briefly, the early symptoms of each of these forms of disease.

The *Epulides* are almost always observed first springing from about the neck of one of the teeth, apparently pushing their way out of the socket, and originating in the odonto-periosteal membrane.

The term epulis is somewhat misleading, being derived from the Greek words ἐπί and οὖλα, signifying "upon the gum," so that it may lead one to suppose that the disease sprung from the gum only. This, as we shall see, is not the case.

Epulis tumours may be either benign or malignant; the former after removal often recurring in a malignant form.

The histological character may be either *fungoid*, *erectile*, *fibroid*, *sarcomatous*, *myeloid or myxomatous*.

The *Epulo fungoid* growth is merely a degeneration of the pulp of a decayed tooth ; it is most common and perfectly innocent. It may be met with in a variety of forms, either springing direct from the exposed pulp of a decayed tooth, sometimes occupying the whole of the cavity of the crown of the tooth; at others, springing from a small carious spot at the side of the tooth just below its crown, and pushing its way up through the gum. The growth bleeds easily and causes often much pain if bitten upon. But what always must be remembered is that the extraction of the diseased tooth removes the disease permanently.

There is, however, a form of epulis which often most closely resembles these fungating growths; they are found, however, if traced carefully, to commence in the odonto-alveolar membrane which adjoins the bone, and instead of growing outwards, pass up the pulp cavity of the fang and fungate on the top or side of the tooth. It is important to recognise these as it is not sufficient to extract the tooth only but a portion of the alveolar process should be also removed.

Epulo-erectile tumours are connected with the capillary system, and are classed as nævi. These growths vary considerably in size in the same cases sometimes being very much larger than others. They are dark, turgid in appearance, bleed freely on the least provocation. These growths, like nævi on other parts, may grow very rapidly, and in some cases undergo spontaneous cure by consolidation.

They usually commence in a small red pimple springing from the gum which sometimes grow somewhat rapidly like a polypus, and often attains the size of a cherry before much notice is taken of them.

These growths are best destroyed by free removal with Paquelin's cautery applied to their base at a black heat. Often secondary hæmorrhage is much to be dreaded, when the slough is separating unless care is taken to burn well into the healthy tissues. I, only a short time since, saw such a case, where the growth was imperfectly burnt away; about three days after the operation, while the patient was eating some hard substances, the slough became disturbed and very free hæmorrhage followed, which was by no means easily arrested.

In some of these cases when the growth is pedunculated it may be removed safely by strangulation. There are, of course, numerous other ways of destroying their growths, by seton, injecting perchloride of iron, electrolysis, etc., which it is not necessary to enter into here.

Fibromata.—These tumours are very commonly met with about the jaws, they usually arise from one of two situations, either from the interior of the antrum or from the perosteal tissues of the alveolus. They are composod of firm interlaced fibrous tissue and resemble very closely simple epulis, but may be distinguished when arising from the alveolus by the dense hard feel ; while, if arising in the antrum they will often attain a considerable size before they attract attention, the anterior wall of the antrum will, however, be observed to be pushed considerably outwards, and the palate also will project into the mouth.

These tumours may be distinguished from the erectile epulides by their resistance to pressure, and also by their colour which is usually of a faintly yellowish white, pure white, or a very pale red.

The growths can also, usually be easily diagnosed by their isolation, their elastic hardness, by the freedom of the surrounding tissues from implication by the disease, the absence of pain and slowness of growth.

These growths may attain to an enormous size in the superior maxilla without seriously interfering with the health of the patient or destroying life.

They not uncommonly are attributed by patients to a blow, but much more frequently are caused by the constant irritation of carious teeth, in the latter case the tumour usually commences in the periosteum connected with the alveolus. In many cases, indeed, on removal of the growth carious teeth are found to be imbedded in its substance.

These tumours if thoroughly removed seem to have little or no tendency to recur.

Sarcoma.—The favourite seat of these growths seems to be about the bones either intra or extra. They are more commonly met with in the superior maxilla, perhaps, than any other bone in the body. They usually occur singly, and, when springing from the interior of the antrum spread very rapidly, presenting in the nostril as a fungating mass, resembling polypus, very vascular and readily bleeding if interfered with. They also if left alone shortly absorb the orbital plate by pressure, push the eyeball forward and outward, and quickly infiltrate the tissues covering the bone.

They also often spring from the periosteum of the alveolar process and present a fungating mass protruding through the socket of a tooth and resembling an ordinary epulis. Very frequently the first intimation the patient has of the disease is that he notices one of his teeth to be longer than the others, he experiences pain on mastication with possibly some slight bleeding around the tooth, he thinks the tooth is at fault and consults the dentist, who presently removes the tooth, and often finds a fungoid growth at the end of one of the fangs, if this growth were examined, as it should be under the circumstances microscopically, the true nature of the disease would be discovered. Too much importance cannot be laid upon this, as so often the disease may be recognised quite in the early stage and removed. Not long since a patient consulted me with a softish growth, growing from just above the alveolar process of the upper jaw, the tooth was somewhat pushed down and loosened. The patient had previously been seen by the ordinary medical attendant who took it to be a gumboil and lanced it, as no pus escaped he watched it for a short time, when noticing it was increasing in size he advised her to see me. The case was one of sarcoma, I freely removed it, and it was found to be quite limited to the alveolus. The patient made a good recovery and has had no recurrence of the disease.

I would strongly advise them in any case when a growth is detected growing from the alveolus and that is clearly not a simple epulis, that the disease should be freely removed with a considerable portion of bony structure around. Little or no deformity follows, and the patient's life may be saved. Again, if in extracting a tooth because it is pushed down, whether decayed or not, and you find a fungoid growth hanging to one of the fangs,by all means have such a growth examined with the microscope, by doing so not unfrequently the presence or absence of sarcoma may be recognised, and by early operation much suffering saved and valuable life preserved.

(*To be continued.*)

GUTTA-PERCHA VARNISH.—Prof. J. Foster Flagg says There is leakage around a gutta-percha filling, and yet you can prevent the clouding of the tooth by varnishing the cavity before filling, and for that purpose I think the varnish suggested by my friend, Dr. Ives, is the best. It is made of virgin rubber, 30 grains, in half an ounce of chloroform : gum damar and sandarac, each 20 grains, in half an ounce of chloroform ; dissolve and make an ounce. It makes a very strong, solid, and somewhat opaque varnish.

AN ADDRESS DELIVERED UPON THE OCCASION OF THE PRIZE DISTRIBUTION TO THE STUDENTS OF THE NATIONAL DENTAL HOSPITAL.

By Felix Weiss, Vice-President of the British Dental Association.

Ladies and Gentlemen, and more especially Students of the National Dental College,—

It affords me a great deal of pleasure to be allowed to present these prizes, and more particularly to congratulate the students of this Institution upon the several proofs they have given us of their ability, their industry and their skill. To me the task is especially gratifying, and I feel highly honoured in being allowed to address those who are entering a profession to which I have devoted the energy of my whole life. I cannot fail to contrast the present with the past—the present, all promise and advancement, the past, all gloom and egotism. In no department of medical education is the contrast more strikingly exhibited than in the profession you are about to follow. The selfishness of most of those that practised this calling (for it could hardly be called a profession in those days), it would be difficult to exaggerate. Every man believed himself to be the happy possessor of secrets unknown to his neighbour, and he took the greatest pains to keep them to himself. Even the instruments he employed, and the material he used were shrouded in mystery. Contrast this state of things with what you see around you to-day. Every teacher in a school like this, and every officer in a Dental Hospital, is only too glad to give you all the knowledge he possesses—indeed, his greatest reward is to see the proficiency of his pupils, and to mark the skill they display. I am quite convinced that the students of this school will bear me out in what I am saying, and will gratefully acknowledge the obligation they are under to their teachers from the Dean to the youngest dresser in the Hospital. You have had from this chair many admirable addresses and much excellent advice. I am not going to detain you by repeating what has been so ably said on former occasions. The names of Dr. Richardson, Sir Edwin Saunders, Mr. Luther Holden, Sir Erasmus Wilson, Viscount Enfield, Sir Spencer Wells, Dr.

Broadbent, Dr. Alfred Carpenter, Sir William Mac Cormack and Mr. Thomas Arnold Rogers are known to you all, and I, the latest, and the least worthy of this honour, thank you, ladies and gentlemen, for the interest you still take and have taken in our school. Returning once more to the students I wish simply to remind them that the skilful architect, when he desires to erect some stately and enduring edifice, commences by laying a well considered and durable foundation; he looks to the solid nature of its basis and takes good care that it shall neither give way in after years or exhale from its loosely packed material anything that might be hurtful to the future resident. This lesson should not be forgotten by you. The student should, during these years of study, lay such a foundation of useful information that in after life he may be able to recall at any moment some of that knowledge which he has stored away in the recesses of his memory. These are the days when impressions are vividly made, and as experience gives him the power to distinguish one fact from another, he looks with gratification upon those studies which perhaps at the time he considered nearly useless. The inexperienced miner may turn up diamonds and think them but pebble stones; he may despise the pyrites when in truth, had he possessed more knowledge, he would have discovered the veins of gold that permeate its structure. Do not complain that you have too many subjects to study, but try and master them all with the full conviction that they will contribute to that perfect "*ensemble*" without which our knowledge must be but elementary. Those who remain throughout their lives attentive students will value that modesty which makes them ready to learn, and I would strongly advise those who have passed through their pupilage to note each week, each day, nay, each hour the facts that come before them. It is one of the crying evils of the age we live in, that men frequently consider their experience unworthy of attention or record, without remembering that out of the multitude of trifles springs the confirmation of every important truth. Try and enforce the habit of recording what you see and cultivate the ability to describe what is brought before you. I have but one subject further to dwell upon,— the manner in which you conduct your practice. Never forget that you are now by education legally entitled to regard your self as a member of a profession second to none. Do not bring it to a level of a mere trade, but try and cultivate those higher classes of study and thought which mark the true professional man and the scholar. You may be dazzled by the temptations that advertisement holds out, but you will find the more you examine these alluring means of making money the more delusive they become. Honourably set yourself to gather round you a connection that believes in your ability, your integrity, and your honour. This will never desert you, but the practice that results from self-laudation and advertised excellence can never be depended upon. You pay for your introduction, and by payment you will have to continue to uphold yourself, and when you have no longer a name worthy of respect, the attractions of the true professional life will the more appear and torment you. In many ways it will be profitable for you to follow the example of your medical compeers and by associating yourself with the College of Surgeons you will at least have the satisfaction of knowing that you are affiliated to one of your oldest and one of our best respected institutions. These are your early days, but while following them remember that a time may come when your past life may be stretched out like a chart before you, take the greatest care that this chart be free from blots. The satisfaction of a well spent life is something, but the gratification and the honour that illumines your declining years when surrounded by the members of your own profession is the reward most keenly felt. Students, don't forget that with you rests the renown, the stability and the honour of our profession in the future. Try, if anything, to surpass those who have gone before, for you have had advantages they never possessed. We who have passed through the heat and burden of the day, look for you to prove yourselves honourable successors, abhorring those things we have abhorred, and following that path of integrity we have tried to point out, so that when you come to transmit to your successors the record of the past, you may be able to say, my labour has not been all in vain. These are the fruits we desire to cultivate, and this the legacy we desire to leave.

ACTION FOR DAMAGES AGAINST A DENTIST.—Frank Englman a sailor, who sued Dr. David S. Skinner, a Brooklyn dentist, for breaking his jaw while extracting a tooth has received a verdict for £200. He sued the dentist for £1000.

ON SOME CASES OF EPULIS.*

By F. F. Burghard, M.B., M.S., Surgical Registrar to Guy's Hospital.

Three cases of a somewhat uncommon form of epulis having lately come under my notice, I thought that it might be of interest to members of this Society to put them on record here.

The first case is that of a woman, æt. thirty-three, whom I was asked to see by my friend, Dr. Wilkins, of Brixton, in 1885. She had had a small lump forming on the outer surface of the lower jaw opposite the left canine tooth for more than three years. When it first appeared it was very soft, and, as she expressed it, she "could almost squeeze it away with her tongue." Within three months after its first appearance, when it was as large as a small pea, it began to be very liable to bleed, and she would sometimes have quite smart attacks of hæmorrhage from it. This occurred on any trifling injury, such as biting upon hard crusts and the like. From that time up to when I saw her the swelling had continued to get very slightly larger, and still bled freely at times. It was for a rather smarter attack of hæmorrhage than usual that she sought advice.

On examination there was an ovoid tumour the size of a horse-bean situated below the left lateral incisor, canine, and first bicuspid teeth of the lower jaw on the outer aspect. It was of a dark purplish colour, as though it were very deeply congested, and I was told by the patient that her former medical man had at one time detected pulsation in it. To the touch it was soft and a little compressible, but without any fluctuation. I could find no pulsation in it, and there was no obvious abnormal vascularity or increased arterial supply to the surrounding parts. The surface of the tumour was but little ulcerated, except at one spot where there was a small mass of very congested granulations, which bled freely on touching. The rest of the surface was rough and warty. Careful examination showed that the tumour was planted upon the gum about its centre ; it was nearly ¼ inch below the margin of the gum so had no apparent connection with the teeth, which were quite sound. It was pedunculated. There were no carious teeth and no history of toothache. The diagnosis of vascular epulis was made and excision of the growth advised. This was refused, and so it was determined to destroy the tumour by the cautery. Fuming nitric acid was applied freely over the tumour, and a large slough separated after a time comprising nearly all the tumour. The remaining portion, however, proved so very vascular that it gave rise, if possible, to more severe hæmorrhage than before, and could not be destroyed by such caustics as A_qNO^3; consequently a month later the Paquelin cautery was used freely and the growth removed right down to the periosteum. This had the desired result. The tumour has not recurred up to the present time. The operation was followed by limited superficial necrosis.

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* A paper read before the Odontological Society of Great Britain.

In this case there was of course no opportunity of making any microscopic examination of the growth. In the second this was able to be done.

A woman, æt. twenty-nine, presented herself as out-patient at Guy's in September, 1887, with a small warty-looking tumour just below the left first bicuspid on the outer surface of the lower jaw. This she had had for eighteen months, and her chief trouble was that it was, as she expressed it, always bleeding. It had grown very little and very slowly. The tumour was the size of a large pea, and was situated on the mucous membrane of the gum just above the spot where the mucous membrane of the lip is reflected on to it. In circumference it was about ¼ inch, but it stood out a good deal more from the surface of the gum. It was dark bluish in colour, soft and compressible, and its free margin was covered with well-marked long fine papillæ, which bled freely on manipulation. Under cocaine it was removed without any great bleeding by an elliptical incision carried round its base and down to the periosteum. There was no connection with the tooth, which was perfectly healthy, and the growth did not appear to spring from the periosteum. After removal the tumour became very flaccid, and on section yielded a good deal of blood, and showed traces of spongy structure. Microscopically there was a good deal of hypertrophy of the papillæ of the mucous membrane, beneath which was a groundwork of fine fibrous tissue, supported by large vascular channels with very thin walls. This nævoid condition did not occur everywhere in the section. In parts there was well-marked fibrous growth, with only one or two somewhat large vascular spaces, in others little else but dilated blood-vessels was to be seen. The growth was quite clearly circumscribed. There has been no recurrence.

The last case occurred in a medical student, aged twenty-three, and presented much the features of an ordinary fibrous epulis, except that it was rather softer, and was of a more bluish colour. It was situated in the right upper jaw opposite the canine tooth. It had been growing two months and was as large as a small bean. There was no apparent connection between the growth and either the tooth or the periodontal membrane.

It was removed by the knife with very profuse bleeding, which was stopped by firm pressure, a sponge dipped in matico being used for the purpose. This occurred in January, 1888, and there are no signs of recurrence up to the present. The microscope showed that the growth was of a soft fibrous character, with many much dilated blood-vessels, all of which had thin walls.

These three cases are somewhat allied to those described by Mr. Salter under the name of Vascular Tumours of the Jaws. They certainly are vascular tumours of the jaws, but they do not agree in all particulars with those he describes under that name. In the cases he mentions there are two main points of difference as compared with those related above. In the first place, in Mr. Salter's cases the growth apparently sprang from or was connected in some way with the periodontal membrane or the tooth pulp itself, so that in one case mere extraction of the tooth carried with it the tumour, which immediately shrivelled up. In the cases I have related, no connection at all could be traced between the tooth and the growth; the latter being situated on the gum well below the free margin of the tooth socket, and in the last case even as low as the line of junction between the mucous membrane of the gum and that of the lip. Secondly, in Mr. Salter's cases the bone seemed also in some way involved in the growth. He speaks of removing a portion of bone forming the base of the tumour and finding it very vascular. In none of these three cases did the bone appear to be affected; indeed in the two last it seems pretty certain that even the periosteum was uninvolved. Moreover, his cases were associated with tooth irritation, while these certainly were not.

I have examined the case books at Guy's Hospital for the records of the cases of epulis treated there within the last ten years, and I have been able to collect in all 25 cases. Of these, 20 (or 80 per cent.) occurred in females, chiefly over the age of thirty; 10 (or 40 per cent.) occurred in the upper jaw, and 15 (60 per cent.) in the lower; 13 (or 52 per cent.) were simple fibrous epulis, while 10 (or 40 per cent.) are put down as sarcomatous. The remaining 2 (or 8 per cent.) were of the nævoid variety.

Both these were of the kind described by Mr. Salter. They were apparently connected with the tooth, and removal of the latter gave rise to furious hæmorrhage. Mr. Salter makes the remark that they usually occur in elderly people. In these instances, however, one patient was a girl of nine, and the other a young woman of twenty-two.

In the last-mentioned case (which was under the care of Mr. Symonds) the tumour pulsated distinctly and synchronously with the heart. There was a nævoid condition of the cheek, and ligature of the facial artery failed to stop the bleeding. Finally, a V-shaped piece of the jaw had to be excised, the bone being very vascular, and the actual cautery used to control the bleeding.

In the second case, under the care of Mr. Howse, the first molar was in close connection with the growth, which had followed two weeks after an alveolar abscess and only appeared as a mass of very vascular granulations. Furious bleeding followed extraction, and an attempt was then made to remove the growth with a scalpel, but the attempt had to be abandoned on account of the free bleeding, which nothing but the actual cautery would stop.

In these cases there has been no recurrence.

I have brought these cases forward for one or two reasons. Firstly, they are not at all well described in our text-books; secondly, they appear to be quite independent of any tooth irritation, and indeed are not in any near contact with the tooth; and, lastly, because I am not sure of their exact nature. They appear to be perfectly simple in character, and do not tend to recur. My view of them is that they are closely allied to the nævoid or vascular papillomata found upon the lip,* and that simple removal of them is sufficient for a permanent cure. The best means of getting rid of them is to cut pretty free of the tumour down to the periosteum, and then the bleeding is comparatively slight, and is easily controlled by sponge pressure or by ice. If, however, the growth is large, and it is cut into in the attempt to remove it, the bleeding, as from all nævoid growths, is most profuse, and the actual cautery is often required to check it. If an attempt be made at removal by the cautery, it should be as radical as possible, as unless the tumour is entirely destroyed it tends to recur as a mass of congested granulations, bleeding freely and often requiring repeated applications of the cautery before they can be completely got rid of. I think that in these cases the removal of a tooth is quite unnecessary. I did not resort to this in my cases, and there has been no recurrence.

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* Certainly they are not nævi of the gums pure and simple. They do not appear to be congenital; on the contrary they are of somewhat rapid growth. The microscope shows them to differ from ordinary nævi in containing large quantities of fibrous tissue of a soft and vascular kind. On the other hand, they are widely different from the firm fibrous epulis.

I had intended, had time allowed, to have read the notes of a fourth case of epulis of a somewhat uncommon nature. It is an example of an epulis, almost certainly fibrous at first, becoming epitheliomatous.

John R., æt. fifty-six, an agricultural labourer, first came under my notice at Ventnor in July, 1884. He had then a typical fibrous epulis situated on the outer surface of the lower jaw opposite the right canine tooth. This tooth had been broken short by a blow in the mouth, and had always ached since. He was a great smoker of short cutty clay pipes, and he said the tumour got in the way of his pipe and was being continually made sore by it. The surface of the epulis was long, papillomatous, and bled readily. The growth was distinctly pedunculated, and there were no glands. In January, 1887, he applied at Guy's for admission, and he was then found to be suffering from an advanced stage of epithelioma of the lower jaw. The ulcer was in the site of the former epulis, and as large as a florin, with perfectly typical edges. The submaxillary and cervical glands were so extensively affected that operation was refused. He gave the history that two months after I had seen him, the growth got very sore and bled more than usual; it then got quite fixed, and finally the large ulcer developed.

I believe it is not uncommon for fibrous epulis to take on a sarcomatous action, especially after removal; but I believe it to be an uncommon fact for one to become epitheliomatous, I have been able to find no similar case in Guy's records. Possibly some of the epitheliomata of the jaws may have originated in this manner, but I am unaware of one having been traced with the same distinctness.

British Journal of Dental Science.

LONDON, AUGUST 1st, 1888.

SCIENCE *versus* SELF.

WERE two such opposed guiding principles to be pitted one against the other, there is little doubt that in nine cases out of ten Self would oust Science. Ask a child of average intelligence which he would prefer, to eat an apple or to have its structural beauties pointed out, and the answer would usually be in favour of the gratification of the animal and not of the intellectual side of life. How is it with us dentists? Are we more prone to think of the main chance first and of science second, and often a very bad second? A highly cultured Asiatic, upon being asked his opinion of the profession of dentistry in England and of its professors, said, Dentistry proper only exists in the chief towns; there I see many educated men who work before their dental chairs like slaves; their recreations are either wild and senseless bursts of physical exertion, or the vapid fooling of drawing room lounging. The best men recognise a higher aim and start little meetings among themselves, to talk about dentistry and allied matters, and then on a certain evening they leave their dinner table and go to some cheerless room with penance seats, and one of them lays down the law for about an hour, and when he has done, one or two get on their feet and say a little about the lecture, after which everybody is thanked, and the meeting disperses. But I find most men prefer a more highly spiced kind of entertainment, and so they write and discuss matters which appear to me to really affect their pockets or their personal feelings. As to Science I have not seen a glimpse of it anywhere." This is somewhat hard criticism, and while it truly reflects the superficial view which a highly intelligent person would form from necessarily imperfect data, it yet possesses so grave a foundation in fact, that we propose to adopt it here as a theme for discussion. Do we as a profession carry on our life work simply to woo the fickle goddess Fortune, or have we a higher and purer motive, a keen ambition to work at and achieve distinction in the field of scientific dentistry? In other words, is self to be the controlling principle of our lives, or are we to follow the stern and exacting behests of dame Science? If one reviews the history of dentistry throughout the past three or four decades, one sees an immense change has been effected and great strides made in general advance; but none can gainsay that the most material progress has been in the direction of social and organisational growth. We are more highly spoken of, and attract men of a higher social grade into our ranks and are received upon a par with members of other professions; we have united ourselves into societies and associations, and have learned to grow jealous of those who repudiate the leadership of those whom it is urged by many are unrepresentative representatives, and of societies whose range many believe to be very narrow; but we can show no very startling progress in the science of our art, we can hardly name twenty men known as scientific workers among the men of the time. Why is this? In the first place a great deal may be said in favour of the management of dental affairs which has been in vogue for the past thirty or forty years, the object of the workers has been to weld into a compact body the profession of dentistry; "in union is strength" has been the motto, and the aim to found an Association of all dentists irrespective of their class or habits of thought. The strength of the Association has been the strength of certain men, men of unquestionable honesty, and probity, but still as Mark Twain hath it, "human." How far it is fair to stigmatise the means selected for representing the outside members of the profession as wholly inadequate, we are not concerned with now ; it must always be a difficult if not an impossible task to control under one leadership a profession composed of such oddly assorted members as is dentistry. The interests of the gentlemen who expose show-cases to tempt the passer by, must ever clash with those of West-end dentists, while Institutes whose *raison d'etre* is greed of gain must ever be at variance with the exponents of sciéntific dentistry. The duty of pouring oil upon the troubled waters of dental politics, distracts, doubtless, from the more arduous and not less important matters of science. The type of mind which takes to organisation and polemic as a spaniel to water, seldom resorts kindly to microscope and scalpel, hammer and trowel. Where the opportunity should arise for scientific work, is in connexion with the societies which daily grow more numerous. The younger men of the profession ought to have leisure enough to undertake useful research, and yet when by any chance a truly scientific paper gains the ear of a dental gathering, it is in nine cases out of every ten either the work of an outsider or of one of the older and busy men who can seldom do more than prosecute a hasty research, and hint at results likely to accrue if the matter were pushed further. There should be enthusiasm enough among our teachers at the various centres of dental education to inspire their advanced students with a desire to press out of the beaten track, and enter that fascinating pathway of original research. It is a reproach to English dentistry that men should be able to hint that Self conquers Science when the struggle of life commences.

POST-GRADUATE COURSE AT THE NATIONAL DENTAL HOSPITAL.—On June 22nd Mr. Willoughby Weiss gave his demonstration at the National Dental Hospital on Bridge-Work, and although all the demonstrations have been of a most instructive nature, yet, perhaps, this was one of the most interesting, as well as instructive, of the whole course, as so very few demonstrations of Bridge-Work have so far been given in London. Mr. Weiss first made a few remarks as to the most suitable cases for this class of work, pointing out that it was very necessary to have strong and firm roots, or teeth for anchorages ; at the same time suggesting that at any rate for beginners, operators would be more successful if they selected patients who took an interest in their mouths, and who would assist the operator as much as possible. He then went on to speak of the several means of attachments, by anchorage roots, that is, roots that have been filed nearly down to the level of the gum, then fitted with a ferrule and cap, and having a pin passed down the centre of the root, this, when cemented in its place, being a very strong point of attachment ; by metal caps after the style of the Richmond Crown, and lastly, attachments by bars, which consist of making a well-dovetailed cavity running on to the crown, on the mesial and distal surface of the teeth, next to the space to be filled, into which is fitted the bar. Mr. Weiss then proceeded to describe the process of making a plate and pin bridge, the form being most suitable for incisor teeth where there are no cavities on the mesial and distal surfaces of the teeth next to the space to be filled. It consisted of making plates to fit the lingual surfaces of the teeth on each side of the space, in the centre of each plate, there having been soldered a platinum pin, a tooth is then fitted and soldered between these two wings ; cavities are then prepared on the lingual surfaces of the teeth, and the whole is cemented in its place by means of oxycholoride of zinc. In speaking of double-bar bridges, he considered this method most suitable when there were cavities in the teeth on each side of the space to be filled ; these cavities were made as much dovetailed as possible with one or both opening on to the crown, a bar was then made to fit into them, a tooth selected, fitted and held together with hard wax so that the whole could be fitted to the mouth ; after this, it was removed and soldered, and then put into its place again and retained by means of cements, amalgams, or foil. He then spoke of anchorage cements, recommending oxycholoride or oxyphosphate of zinc as a means of retaining crowns and attachments to roots, and gold if possible for the bars, using gutta-percha in but few cases except for the purpose of temporary attachments. On the subject of Hygiene, Mr. Weiss said that he does not find that the mouth is at all in an unclean condition if the patient will only use ordinary care, that is, as much care as they bestow upon the natural teeth. He, however, pointed out that it was absolutely necessary in all these cases to make the surface resting on the gum as small as possible, as the secretion coming from the gum, &c., would be likely to make the mouth offensive ; but that if the roots were made carefully, the surface so covered up would be so small that it need not be taken into consideration. In the demonstration that followed, Mr. Weiss fitted in cases of double-bar-bridge, pin and plate bridge, combination of bar and pin and plate bridge, also two cases attached by anchorage roots and bars, both of which cases had been worn for some time, being retained in position by means of gutta-percha ; these cases were removed and replaced. A case was also shown where one of Dr. Bing's bridge teeth had been used, this was said to be a useful tooth for the molar or bicuspid region, where only to the condition of the teeth amalgam was used as the retaining cement. In all, the lecture and demonstration took about two hours and a quarter, and was highly appreciated by about thirty members of the profession who attended.

THE ODONTOLOGICAL SOCIETY AND ITS CRITICS.—Some rather severe criticisms have been uttered anent the conduct of affairs during the past year or so at the Society. It is said the meetings have begun late, the time has been frittered away on papers devoted to non-dental themes, and in many cases very far below the average of merit which a learned society should admit as worthy its august consideration. Discussion, it is alleged, is practically burked by the plethora of words which gushed from the readers of the papers, since, poor men! two or even three, were expected to get through in twenty minutes, manuscripts which they fondly hoped would have formed material for the time occupied by the whole meeting. To scramble through a carefully prepared paper in a few minutes amid the ill-concealed noises made by tired and fidgetty men is hard enough, but to have your time taken up by a gentleman who insists upon prosing on about matters not in any sense interesting to the meeting, makes the hardship still less endurable. The other side say, somewhat weakly, that, granted the Odonto papers have latterly been poor stuff, is not feebleness the order of the day with many medical societies? This is obviously a *non sequitur*, the Society of Dentists is surely not going to depreciate a long list of really valuable communications now extant in its transactions, because the second rate medicals choose to waste their time over eviscerated pamphlets and vapid discussions. It is also urged that the same cry against the Oaonto has before from time to time been heard. Well, if this be so, it is the more reason why prompt action should be taken, and the reproach be removed never to be again fostered. The Odontological Society is too wide and representative for it to be able to lightly forego its prestige or go back from the high standard it has always insisted upon in the papers read before it.

CORES FOR UNDERCUTS.—In making cores for undercuts in cases where models will not draw from the sand, use ordinary flour to the extent of about ten per cent. in bulk with ordinary moulding sand, or what is better, marble dust. Mix a sufficient quantity thoroughly, in the dry state, then moisten it a little more than for moulding, fill the undercuts and trim to suit; jar out the cores and place it in an oven or over gentle heat. When dry they can be handled nicely, replace them and mould as usual, they can then be placed in the mould, when a perfect die will be the result, without any of the annoyance attending the operation incident to cores made in any other way.

DR. HARLAN ON FRENCH DENTISTRY.—France is, according to Dr. Harlan, the home of more original *brochures*, pamphlets and works on dentistry, than any other country in the world, and the professional activity is only just being awakened. He was told that there are several well-known French dentists who have more calls on their time than they can possibly attend to, and that the incomes of some exceed 100,000 francs per annum. Until recent years the bane of French operative dentistry has been the use of amalgams and cements, and the lack of thoroughness in filling roots. Indeed, many French dentists never think of filling a root when a tooth is to be re-planted or a crown is adjusted, and many destroy the pulp and leave it in the tooth, fill the cavity and bore a vent-hole. Too little time is spent in the preparation of cavities, and gold fillings, when inserted, are poorly done.

TO REMOVE RUST-STAINS from nickel-plated instruments, thoroughly grease the instrument and after several days rub off with a cloth moistened with ammonia. If any spots are still visible they are touched with dilute hydrochloric acid and immediately rubbed off. The instruments are then washed and polished with polishing powder.

AMALGAM FINISHER.—In many places a narrow strip of rubber dam, used as a tape, will serve admirably for the purpose of smoothing down to the borders and polishing amalgam fillings on proximal surfaces of the bicuspids and molars, and is especially good for removing any particles that may adhere to the gum between the teeth.

LIST OF PRIZEMEN AT THE NATIONAL DENTAL HOSPITAL. *Rymer Gold Medal for General Proficiency*: Mr. W. Rushton. *Dental Surgery*: Prize—Mr. A. S. Jones, Certificate of Honour—Mr. W. Rushton. *Dental Anatomy*: Prize—Mr. W. Rushton, Certificate of Honour—Mr. F.

Lankester. *Operative Dental Surgery* : Prize—Mr. Arthur Fogg, Certificate of Honour—Mr. R. S. Faro. *Dental Mechanics* : Prize—Mr. Arthur Fogg, Certificate of Honour—Mr. W. Rushton. *Metallurgy* : Prize—Mr. Haycroft, Certificates of Honour—Mr. Dunlop, Mr. Faro. *Dental Materia Medica* : Prize—Mr. Chas. Clark, Certificate of Honour—Mr. Field. *Mechanical Work* : Prize—Mr. Field. *Students' Society Prize for the best Paper read during the year* : Mr. Rushton. *Elements of Histology* : Certificate—Mr. Lankester.

PERIOSTITIS AND NECROSIS OF THE SUPERIOR MAXILLA. An interesting case of this affection is reported by Dr. J. Fremont Burket, an American dentist. The patient was a child, aged seven years, suffering with typhoid fever of four weeks standing. At the end of the second week, the cheek began swelling. About a week from the first symptoms of inflammation she worked out a tooth, the superior deciduous first molar. Two days later the doctor extracted the deciduous second molar, the roots of which were not absorbed. These teeth were decayed. The left cheek became greatly swollen, red, and glossy. Her nose and mouth externally were sore and her mouth was in an extremely fœtid condition. There was a large hole in the inside of the cheek, that, together with the gums of the left superior maxilla, were sloughing off and discharging fœtid pus freely. None of the permanent teeth, excepting the incisors, had yet been erupted, but they could be seen through the orifices where the deciduous teeth had been extracted. A careful examination showed the first bicuspid to be loose. This was extracted and then it was found the root was completely absorbed. Its extraction was followed by a copious discharge of pus. In a few days the second bicuspid was removed, the roots were absorbed. The swelling and inflammation were subsiding somewhat, but the fœtid pus was being freely discharged.

Necrosis of the maxilla had developed and in a short time the bone was bared between the lateral incisor and molar. When sufficiently well, she was taken to the dentist. On her first visit there was considerable inflammation, a free discharge of pus and a fœtid condition of the mouth. On the second visit the necrosed bone was a little loose. On the eighth visit the bicuspid and first molar were removed, the roots of which were partially absorbed. The exfoliated bone was also removed. It consisted of a part of the anterior surface of the body of the maxilla, one inch in length and of irregular width, about three-fourths of an inch at the widest part, and the alveolar processes from the left lateral incisor to the second molar, comprising the floor of the antrum.

THE DISTRIBUTION OF PRIZES AND SOIREE AT THE DENTAL HOSPITALS.—The National Dental Hospital "seasoned its graver discourses" with dancing, the London Dental Hospital with card tricks and recitations, etc. In either case the result scored was a very agreeable evening. Mr. Felix Weiss' appropriate and well-timed speech will be found elsewhere in our columns, and we commend it to our readers. One of the features of the Leicester Square entertainment was that the soiree was held for the first time in the Hospital premises. Tastefully decorated it was hard to believe the comfortable lounges and handsome theatre had that very morning been the site of the bustle incident to the Hospital daily routine. The Earl of Lathom, who distributed the prizes, was good enough to regale his audience with anecdotes about dental matters which, if appropriate, were somewhat harrowing to the feelings of the fair visitors. Among a motley and enthusiastic throng we noticed many faces "familiar erstwhile." Mr. Bertram, the prestidigitateur is too well known to need praise, suffice it to say, he never showed his rare skill to greater advantage.

Abstracts of British & Foreign Journals.

INDEPENDENT PRACTITIONER.

PATHOGENIC BACTERIA OF THE HUMAN MOUTH.

INTRODUCTION.

By Prof. W. D. Miller, Berlin.

The temperature, culture-material, moisture, etc., of the fluids and accumulations of food in the human mouth present the best universal medium for the development of all bacteria. Among the many different kinds of bacteria that are continually entering the mouth with food or air, pathogenic kinds are included, and these proliferate for a certain length of time, and establish themselves as permanent occupants of the mouth. Pathogenic bacteria may be present in the mouth without manifesting themselves in any other way than the ordinary parasites as long as the mucous membrane remains intact. If, however, the resistance of the soft parts has been impaired by any constitutional cause (scorbutus, syphilis, etc.), a weak point is made at which the bacteria cause local inflammation, suppuration, etc. Or if, as in tooth extraction, wounds of the mucous membrane are inflicted, an entrance into the blood or lymph vessels is thereby provided, which may lead to abscess, pyæmia, septicæmia, etc. In this manner many of the diseases of the gums and contiguous parts (not excepting pyorrhœa alveolaris), as well as the majority of the infections following tooth extractions, are to be accounted for. Every tooth extraction which is not performed under antiseptic precautions may prove an inoculation, and whether the subject proves refractory or not will depend upon a variety of circumstances, as the size of the wound, the resistance of the parts, the character and number of bacteria entering the wound, etc. Parré reports a case of chronic pyæmia which originated in a diseased wisdom-tooth. Poncet describes a case of osteitis, which, originating in a carious tooth, led to a general septic infection, terminating fatally in forty-eight hours. Tripp observed a case of inflammation of the brain following an alveolar abscess. Rittor, a case of septic blood poisoning from a carious tooth, terminating fatally, and Mosetig-Moorhof, a case of fatal osteomyelitis following extraction; and others. Where resection of the alveolus is practiced, extraction of a root in an unclean mouth without antiseptic precautions will often cause inflammatory reaction of a septic nature. The human mouth when not clean is capable of infecting a healthy individual. Many years ago Leyden and Jaffe pointed out that the bacteria which are found in the mouth, even in a state of perfect health, may, under predisposing circumstances, give rise to severe lung diseases; also James Israel, who has given much time to the study of the transportation of bacteria from carious teeth, describes a number of cases of abscesses on the neck, chronic pyæmia, etc., in which he was able to find the primary source of infection in the mouth. The oral cavity, when infected with parasitic vegetations, may have a most deleterious action on the general health. Hence arise many cases of loss of appetite, nausea, dyspepsia and consequent general ill-health. Von Kaczorousky says: "When we take into consideration that affections of the mucous membrane of the mouth may *per continuum et contiguum* spread over the whole mouth and throat, and thence upwards and downwards over the respiratory and digestive tracts, through the Eustachian tube to the internal ear and brain, from the nose through the lachrymal canals to the eye, through the sieve of the ethmoid to the membranes of the brain; furthermore, when we remember that the irritation of the terminal branches of the quintus in the gums may produce irradiations in other branches of this nerve or irritations in near and distant organs of the body. Individuals whose teeth are in a state of almost complete ruin, whose gums are swollen and suppurating, whose breath is foul. Many of the oral bacteria are not to be cultivated on any of the artificial media at present in use, among others leptothrix buccalis, vibrio buccalis (spirillum sputigenum) and spirochæte denticola, and further a thick spirillum and a leptothrix which occurs in short, stiff, pointed threads. These are found in every mouth. The injection of saliva under the skin of small animals was frequently seen to be followed by septicæmia and death of the animal in a few days, or even hours. A. Frankel mixed saliva from healthy persons with bouillon, and allowed the mixture to stand four to five hours at blood temperature. Rabbits vaccinated subcutaneously, or in the lung, died from blood poisoning in twenty-four or forty-eight hours. Occasionally Frankel obtained the same results by vaccinating animals with fresh saliva. Also Miller, by inoculating rabbits and mice with the saliva of an individual suffering from mycosis tonsillaris benigna. Inoculation in the lung was regularly followed by death of the animal within thirty hours. In like manner the experiments of Davaine, Vulpian, Klein, Sternberg and others proved, that a group of micro-organisms is frequently to be met in the human mouth, which, having found their way into the circulation, may produce the most dangerous diseases. Kreibohm found two kinds of bacteria, which were characterized by the fact that they grew on none of the culture media now in use. The first kind was obtained twice by inoculating mice with the scrapings of a coated tongue. The mice died in a few days, and showed, on section large numbers of bacilli in the blood. One drop of blood of these mice, inoculated into other mice, produced constantly the same disease. Death followed, as a rule, in two to three days. The second kind was obtained in the same manner. Inoculation with this bacterium produced death in eighteen to forty hours. The micro-organisms were found in great numbers in the blood and in the capillaries of the different organs. They appeared as short rods, slightly contracted in the middle ; after staining they have the appearance of an 8. Kreibohm also found once in the coating of the tongue and twice in saliva, a bacterium which he named Bacillus crassus sputigenus. It appeared as short, thick bacilli, with rounded ends, or often bent in the form of a sausage. The cultivation succeeded easily on different media. Mice die in about forty-eight hours after inoculation with small quantities, and show in the blood numerous bacilli. Rabbits do not react on slight vaccination, but die from blood poisoning forty-eight hours after intra-venous injections. Black examined the fluids in the mouth for pyogenic bacteria, and found in ten examinations, the Streptococcus pyogenes aureus seven, Staph. pyog. albus four, and Staphylococcus pyogenes three times. He came to the conclusion that a careful examination would reveal these micro-organisms in nearly all mouths. The Micrococcus tetragenus has been repeatedly found by Prof. Miller in the fluids of the mouth. It causes the death of small animals (mice, guinea-pigs, etc.) in three to ten days after vaccination. Biondi also has described five pathogenic organisms obtained from the human mouth :—

1. Bacillus salivarius septicus.
2. Coccus salivarius septicus.
3. Micrococcus tetragenus.
4. Streptococcus septo-pyæmicus.
5. Staphylococcus salivarius pyogenes.

The Bacillus sal. sep. forms very short elliptic rods, with pointed ends and relatively thick body, and grows only slowly on the ordinary neutral media. Mice and rabbits, after injection of ½-1 ccm. of saliva containing this micro-organism, died generally in twenty-four to seventy-two hours; the section showed œdema and hæmorrhagic tumour of the spleen, etc. The Coccus sal. sep. was found by Biondi only once, in the mouth of a patient suffering from puerperal septicæmia. Mice, guinea-pigs and rabbits, inoculate subcutaneously, died in four to six days with cocci in the blood and tissues. The Streptococcus septo-pyæmicus was not to be distinguished from that of erysipelas, phlegmon and puerperal metritis. Its action was similar. The Staph. sal. pyog. was found only once, in the saliva of a person suffering from angina scarlatina. All animals infected with this micro-organism reacted by formation of abscess at the point of vaccination. Two of these organisms, described by Biondi, Staphylococcus sal. pyog. and Coccus sal. sept., were found, each but once, in the mouth of persons suffering from severe infectious diseases, and can therefore hardly be considered as oral bacteria, any more than the tubercle bacillus, which may always be found in the mouths of consumptives. Dr. Miller experimented with 42 pure cultures, 2 mixed cultures, and 22 gangrenous pulps, and has made 93 subcutaneous inoculations of mice in pockets, using pure cultures, 10 subcutaneous injections of pure cultures, 58 pocket inoculations with pieces of gangrenous pulps, or with pus arising from such inoculations, injections of pure culture into the abdominal cavity of mice, rabbits and guinea-pigs, 22 injections into the thoracic cavity, besides a number of mixed injections. The pockets were made at the root of the tail, and the inoculation material was usually taken from an Agar-Agar culture 1-2 weeks old. Injections were made with the sterilizable subcutaneous syringe, cultures in beef-extract-peptone solutions from 2-4 days old, being used. For mice, 0.05 to 0.1 cc.; for rabbits and guinea-pigs, 0.25 to 0.5 cc., were injected. The mice were always etherized before making the injection. In 18.8 per cent. of the pocket inoculations a severe local reaction followed, resulting in the formation of a small abscess, generally remaining superficial, but occasionally penetrating into the subcutaneous tissue. In 8 cases the inoculation was followed by death, the mice showing, in three cases, symptoms of blood poisoning, the micro-organisms being also present in the blood and different organs. In a number of cases necrosis of the skin around the pocket occurred, a piece of skin one-fourth to one-half inch in diameter being thrown off. In 50 per cent. the reaction was light, nothing more than a slight local redness and formation of a very minute quantity of pus being observed. In 31.2 per cent. no reaction whatever could be detected, the wound healing rapidly, without either suppuration or swelling. Of the different kinds tested by injections, 24 per cent. produced violent reactions, resulting either in the death of the animal from septicæmia, peritonitis, pleuritis, etc., or in extensive suppuration and abscess formation. Slight reaction was produced in 32 per cent., temporary sickness, from which the animals soon recovered, or slight swelling at the point of injection ; in 44 per cent. no effect could be detected. Subcutaneous inoculation with portions of gangrenous pulps produced comparatively severe symptoms in 36.8 per cent. of the pulps experimented with ; slight effects in 47.4 per cent., and no apparent reaction in 15.8 per cent. It appears from these results that inoculation with portions of gangrenous pulps is more dangerous than inoculation with pure cultures from the same pulps. The mixed infections invariably resulted in the death of the animal. Prof. Miller found in the oral cavity a number of bacteria which possess more or less pathogenic action. The first of these, Micrococcus gingivæ pyogenes, was found in a case of pyorrhœa alveolaris three times in the same mouth, at intervals of three months ; also in a very filthy mouth, in the deposit around the teeth. It appears as irregular cocci, or very plump rods, singly or in pairs. In gelatine-plate cultures it grows rapidly at room temperature, forming round colonies, with a distinctly sharp margin. At first the colonies appear very slightly coloured under the microscope, and as they become older they grow very dark, especially where they lie far apart. Line cultures on Agar-Agar present a moderately thick, greyish growth, having a tinge of purple by transmitted light. Under the microscope they appear as a homogeneous, nearly colourless matrix, interspersed with darker figures of various irregular shapes. The gelatine does not become liquefied. Cultures in beef-extract-peptone-sugar-solutions show a strong acid reaction and develop considerable quantities of gas. Subcutaneous inoculations of mice were followed by abscess and necrosis of the skin, occasionally resulting in the death of the animal. Injections in the abdominal cavity invariably produced the death of the animal in 12-24 hours, the section showed immense numbers of bacteria in the abdomen, a considerable quantity of a serous exudation, peritonitis. Only a very limited number of larger animals—two rabbits and two guinea-pigs—were inoculated. The animals appeared sick for a time, sitting quietly in the corner of the cage and refusing to eat. After two or three days, however, all symptoms disappeared.

The second, Bacterium gingivæ pyogenes, was found in the same mouth with the micro-organisms just described, and also in a suppurating tooth-pulp. It appears in form of thick, short bacteria with rounded ends, one and a half to four times as long as thick. In plate cultures it grows very rapidly, even at room temperature, the colonies being clearly visible to the naked eye in 24 hours. Under the microscope they appear as beautiful, perfectly round, yellowish colonies, with a sharp, dark border. The gelatine becomes rapidly liquefied, so that in forty-eight hours the first dilution is completely melted. Line cultures on gelatine appear in fifteen hours as a trough of melted gelatine one and a half mm. broad, the side of the trough being cloudy and the bottom marked by a line of white sediment. Line cultures in Agar-Agar present a thick, moist, slightly greyish growth by transmitted light, having a slight greenish yellow tinge under the microscope, colourless at the margin, yellowish brown towards the middle, and presenting a fibrillated structure. The gelatine rapidly melts in form of a funnel, while the masses of bacteria sink to the bottom, the melted gelatine, however, remaining cloudy. Injection of this fungus into the abdomen of white mice produced death in 10-24 hours. During their sickness the mice sit drawn up, with bent back and eyelids glued together. The section showed peritonitis, and in some cases purulent exudation. Micro-organisms were found only in a very few numbers in the blood. Injection of 0.25 into the abdomen of rabbits and guinea-pigs produced identical results. Injection into the lung produced death in less than 24 hours. Subcutaneous inoculation (injections) of mice, resulted in extensive abscess formation. The third bacterium (Bacillus dentalis viridans), was found in the superficial layers of carious dentine. It appears as slightly curved, pointed rods, single or in pairs. It grows well in plate cultures at room temperature : the colonies under the microscope are nearly colourless, having but a slight yellow tinge ; they are perfectly round, with a sharp contour, and show, when they do not lie too close together, two or three concentric rings. This bacterium is characterised by the production of a beautiful opalescent green colouring matter, which it imparts to the gelatine ; the cell itself is not coloured. Line cultures on Agar-Agar produce a very thin growth, with irregular margins, bluish by transmitted light, greenish grey by reflected light, and colourless under the microscope. Subcutaneous applications from pure cultures of this bacterium produced severe local inflammation and suppuration, and in one case death by blood poisoning, the bacteria being found in large numbers in the blood and tissues. Injections into the abdomen of white mice and guinea-pigs, produced death in 60 per cent. of the cases, in 22 hours to 6 days, from peritonitis. Bacteria could not be found in the blood microscopically, but cultures made from the blood of the heart developed pure cultures of the bacterium injected. The fourth micro-organism, Bacillus pulpæ pyogenes, was found in a gangrenous tooth-pulp. It occurs as bacilli, often slightly curved and pointed, either singly, in pairs or in chains of four to eight. It grows moderately well in gelatine-plate cultures, the colonies appearing large and round, dark yellowish brown, with distinct margin. Line cultures on gelatine begin to melt in 18-24 hours, up to that time appearing as greyish, shining lines, slightly elevated above the surface of the gelatine and about one mm. wide. Line cultures on Agar-Agar produce a moderately extensive growth, bluish white, glistening by transmitted light, grey by reflected light ; under the microscope, granular, sometimes fibrillar in structure, grey, or in older colonies, yellowish. It melts the gelatine with about equal rapidity on the sides and in the middle of the tube. Injections of 0.05 into the abdominal cavity proved fatal to mice in eighteen to thirty hours.

(To be Continued)

THE OHIO JOURNAL OF DENTAL SCIENCE.

REPORT OF CASES IN ORTHODONTIA.

By EDWARD H. ANGLE, D.D.S., Minneapolis.

A YOUNG German, 18 years old, of good health and development, number of teeth complete (except the superior laterals.) all good in colour, shape, and structure. The laterals had never erupted, and no indications of their being imbedded. Probably the germs were never formed. Owing to the absence of the laterals, the canines had moved slightly forward. This gave the peculiar *canine* expression to the teeth.

Treatment. The canines were carefully and accurately banded and pipes soldered to them. Into these pipes were inserted the ends of the spring rotating levers ; the other ends of the levers were sprung round and latched into little hooks soldered to a band encircling the right first molar. Advantage was taken of making one anchor tooth serve for both levers. They acting in opposite directions, their forces antagonizing, there was not the slightest displacement of the anchor tooth, nor was there any tenderness. The levers were removed once a week and straightened that an even rotating force might be maintained. They were powerful teeth and four weeks were occupied in turning one of them, the other a few days less. They were retained in their new position by removing the levers and inserting in their places in the pipes from the opposite side pieces of the gold plated wire and bending it to rest against teeth from the opposite side from which pressure was exerted. The crowns were then ground to imitate as nearly as possible large laterals. The result was satisfactory. In rotating teeth by this simple but powerful method care should be used that the levers should touch *only* at the anchorage and the *tooth being moved*, if it binds against other teeth the tendency is to pry the moving teeth out of line if the force exerted be so great that the tooth is moved faster than absorption in the alveolus can take place a springing or bending of the alveolar plates will take place, and as the external plate is much thinner than the internal the tooth will follow the course offering the least resistance, and the result will be the tooth will take a position more or less outside of the line of the arch. Such outward tendency should always be an indication that too strong a lever is being used. No. 14 or 16 piano wire is usually strong enough. The next case was that of a young Scotch girl. The teeth were all in position in the arch except the central incisors which were badly inlocked giving to the features a flattened expression. They were moved outward into their proper position by an appliance The second bicuspids were banded and piped on a line paralled with the gum. A heavy piece of wire made of german silver or platinized gold was bent to conform to the shape of the inner arch—the ends of this wire arch were passed through the pipes on the anchor teeth and keyed in these pipes to prevent slipping. This is done by passing a small drill through the pipes on the anchor teeth through this was passed the key or pin made of fine piano wire fitting closely. To this wire arch opposite the teeth to be moved outward was soldered little pipes into which were placed the small screws for pushing, the flattened ends of the screws resting in little slots in delicate bands encircling the teeth to be moved. The force was applied by turning the little nuts with a wrench every other day. After the nuts had travelled the length of the thread they were screwed back again. The keys from the anchor pipes were removed and the wire arch moved forward and keyed in position as before. Eleven days were occupied in removing the teeth out of lock, after which they were retained in their new position by the wire arch already in place and which was allowed to remain five days when it was removed and the occlusion with the inferior incisors depended upon for future retention. There is a slight spring in this wire arch which relieves the necessity of tightening the nuts as often as would be required with fixed and rigid anchorage. This wire arch may also be used as well to pull from as for pushing.

A TIN SHIELD.

By Dr. Henry Barnes.

For anterior or posterior approximal cavities in the molars or bicuspids and posterior cavities in the cuspids, where the line of decay extends below the free margin of the gum where one or more teeth are missing, the tin shield will much more than save the time occupied in its manufacture. Take taggers' tin and cut to shape so that each end will exactly fit the tooth against which it is to be placed, cut the tin a little longer than the space between the teeth. Now bend in the centre so that each end will rest upon the tooth and press into position, and with a suitable instrument burnished to place about the cavity to be filled. It will sometimes be found best to fasten one end with a piece of gutta-percha or sadlers' wax. This shield will hold back the dam thus preventing its being caught on the bur, while the cavity will remain in full sight. The tin will also serve as a reflector and need not be removed until the operation is finished.

Literary Notices and Selections.

REPORT OF THE COMMITTEE ON DENTAL PRACTICE.*

By M. L. Rhein, M.D., D.D.S., New York City.

The past year has been prolific in material for your committee's report. The meeting of the International Medical Congress furnished a stimulus to which is due in a large measure the many advances made in our practice. When a patient turns over to our care the welfare of his dental organs, what is our first duty? Put them in a condition of cleanliness, for this is absolutely necessary before, in the majority of cases, a true conception can be formed of what work is demanded. For the removal of calcareous deposits the dental depots are flooded with instruments, but the profession is somewhat divided as to the merits of the two systems, viz: the push and pull movement. Now your committee believe in both of these methods; whenever the instrument does not come in contact with the gum, the push method is, generally to be preferred: but as soon as this style is used under the gum it produces unnecessary laceration of the parts, and there is danger of portions of the deposits being lost among the pericemental tissues, and later, starting up an irritation as foreign bodies. It is here that the pull instruments are so efficacious, for with them there is no excuse for losing any of the deposit or lacerating the tissues unnecessarily. The pull form of instrument should terminate with an acute angle but a trifle removed from a right angle, though unfortunately nearly all of them have perfect right angle terminations, sometimes even tending to obtuseness. The instrument should be of the best of temper, having a delicate termination, and the edge always in good condition, so that when by carefully inserting it under the border of the deposit a moderate pull will always cause it to come away. The cutting end of the instrument whenever feasible should conform to the shape of the tooth. Notable instruments of the pull class are found in the Baylis and Abbott sets, and of the push style in the Crushing and Atkinson forms. Having removed all the calculary deposits the polishing with the pumice powder comes next. The wetting of this with hydrogen peroxide instead of water has been found of great value. Brown's metal strips with moistened pumice, stand unrivaled for polishing approximate surfaces, but should always be supplemented with dental floss.

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*Read before the Dental Society of the State of New York at its twentieth annual meeting, held in the city of Albany, on Wednesday, May 6th, 1888.

We have heard very little during the past year of the Herbst method of filling teeth. The great danger of defects ultimately appearing around the enamel margins has caused the abandoment of the method by many of its former advocates. On the other hand, the beautiful adaptability of the Wolrab gold in lining cavity walls has been of inestimable benefit to us, insomuch as it has put all our gold manufacturers on their mettle; and to Mr. Williams, we award the palm of eclipsing the Wolrab gold in his late production, crystalloid gold. The mallet, however, still reigns supreme, either in the shape of the electric, engine, automatic, hand, or the very recent production of Dr. Bliven of the pneumatic, which is the very closest imitation in form of blow to the electric.

The past few years have finally settled the fact that in all approximal fillings complete contour restoration must be made so as to insure the best practical results; and all separations are to be avoided and condemned.

The proper use of alloy fillings has received a great stimulus of late. Your committee cannot condemn too severely the habit so many practitioners have of carelessly inserting an amalgam filling in a manner that says, plainer than speech, anything will do here, considering the price to be paid. The use of copper alloy has been largely advocated during the past year. Its great objection is its extreme blackness, which is always an unpleasant thing tn any mouth. Equally good fillings can be made of the light coloured alloys if they are properly inserted and finished. Having first adjusted the rubber dam, prepare the cavity as carefully as for gold. Then weigh the alloy and mercury and mix it thoroughly in a mortar, being careful to have it soft enough if contour work is needed. Pack in small masses with the rotary method, and when sufficient amalgam is inserted take small pieces of gold foil, No. 1, and after annealing burnish them lightly over every exposed portion of the filling. The gold will be entirely taken up by the excess of mercury and disappear, leaving perfect edges, and a finish the colour of bright steel, which will take as fine a polish as a gold filling.

The immediate separation of teeth has been very much encouraged by the admirably constructed separators introduced by Drs. Perry, Parr, and Morey. While of inestimable benefit at times, great harm has been done by their improper use.

The use of the matrix has been very much increased of late, so that to-day it is a necessary adjunct of every dental office. It is, however, a standing menace to the future of operative dentistry. The beautiful restorations of our Varneys and Webbs will soon pass away and be looked upon as a lost art if the matrix is not kept from the hands of dental students. It is one of the rocks lying in young men's paths which will surely wreck them if not avoided. Many of our experienced practitioners have discovered that the place for the matrix is limited, if a perfectly constructed filling be the object. To Drs. Jack, Brophy, Guilford, Woodward, Miller and Herbst we are indebted for our best patterns of matrices.

Fillings when completed, so as to thoroughly restore the natural contour, should be given an enamel finish.

For restoring cutting edges of teeth, gold and platinum combined is the best material.

Outside of amalgam, plastic fillings are to be deprecated, except for temporary work in tiding over certain periods in the mouths of young people, or for the capping of pulps Since our present method of so successfully treating pulpless teeth has come into use, many practitioners have not attempted the task of saving exposed pulps in teeth of matured formation. The Morey drill has been of great service in this line. By the use of cocaine hydrochlorate there need be no pain of any consequence ; the root, or roots being thoroughly cleansed, are syringed with a solution of mercuric bichloride in hydrogen peroxide (one grain to the ounce), thoroughly dried with hot air, bibulous paper cones, or the galvano-cautery. A few fibres of cotton wound around a delicate broach and covered with chloro-percha solution is passed through the entire length of the canal, giving the very dry sides of it an opportunity to suck in the solution. A solid cone of gutta-percha is then forced to the end of the root and packed home with chloroform, and over this a small amount of oxyphosphate is placed, and the tooth is ready for permanent filling, everything being performed in one sitting.

In materia medica, hydrogen peroxide and mercuric bichloride have thoroughly displaced carbolic acid and creosote, accomplishing the additional benefit of ridding us of their vile odours. Cocaine has found a permanent place in our cabinet, and antipyrine is looming up as a very serviceable remedy in controlling neuralgic spasms. We have not yet discovered a specific obtunding agent for sensitive dentine. In this direction Dr. Ottolengui has recently reported some very wonderful results, reporting no failures in about fifty cases. The method of procedure is to use an ether spray directly against the dentine, having first thoroughly dried the cavity with blasts of hot air.

For using remedies we very frequently have to have recourse to the hypodermic syringe, a form of which lately introduced by Dr. Dunn, of Chicago, is a great improvement, where no great force is required. The atomizer and spray are also in general use.

The treatment of pyorrhœa alveolaris has made rapid strides during the past few years, and to-day the presence of this disease is no longer recognised as a legitimate pretext for the extraction of a tooth. In the treatment of this affection, seeing that the teeth are clean, which means a great deal, is the first step. Then follows the procedure of thoroughly washing out the pus pockets with a germ destroyer, for which purpose nothing surpasses the mercuric bichloride and hydrogen peroxide mixture. This is immediately followed by strong stimulating treatment as a paste made from crystal carbolic acid and caustic potash, to be followed with a soothing dressing of glycerine and tannic acid, which is in most cases all that is required. The most difficult types of this disease to treat successfully, are those where the roots have lost a large portion of their attachment, for in these cases excessive motion prevents all attempts of nature at reproduction of tissue. The chairman of your committee has successfully demonstrated the fact, that in these apparently incurable cases, all that is required is to assist nature by holding the teeth in an immovable position, when reproduction of tissue is as certain to proceed as in the milder forms of the disease. The binding wire and all forms of ligature are not only uncleanly and too temporary, but permit a certain amount of motion which in these aggravated cases is just sufficient to prevent the permanent adhesion of the new protoplasmic formations. To insure success, unite a sufficient number of the teeth together permanently and the desired object is attained. The case presented before the First District Society in January has since steadily improved, and we trust to show the same at one of the clinics next winter. Since then we have performed the operation on two other cases with equally gratifying results. We have also received communications from various men who have adopted this treatment successfully, so that we can at this day safely recommend it as the proper method of treatment of the severest types of pyorrhœa alveolaris.

Implantation of natural teeth has received a great amount of attention during the past year, and many are to-day extensively engaged in the practice. The present outlook is however very gloomy as to its becoming an operation of any permanent value. We have heard its wonderful success heralded all over the country, but in truth there can be no permanent success recorded in so short a time; even in the wonderful result portrayed in this month's *Cosmos* by Dr. Curtis of your committee. Dr. Black has shown that the ultimate dissolution of the root substance had commenced. Already the numerous failures of many reported complete successes demonstrate that the end of the illusion is approaching, and the operation will soon be a thing of the past. The microscopical examination of the tooth removed from Dr. Younger's mouth, also reported in this month's *Cosmos*, clearly demonstrates that in this case absorption had taken place similar to that which we find in the shedding of a deciduous tooth.

At a special clinic of the First District Society held on October 15th, 1886, Dr. W. J. Younger implanted an inferior central incisor in the mouth of Dr. C. L. Andrews. This tooth has since been under continued observation by the chairman of your committee. It became very firm soon after being inserted, and changed its colour to conform to the other teeth, as they all do. It was a typical case of success, and we have seen many experts deceived in picking out the implanted tooth. Dr. Andrews, a dentist himself, felt quite proud of the result, and everything pointed to a long continued usefulness of the new member of his inferior maxilla. But about September, 1887, he first noticed that the tooth was getting a little loose. This he attributed to any injury received in eating corn, and ligatured it and gave it every other attention; but it grew from bad to worse until, on February 21, your chairman extracted the tooth and immediately placed it in a weak solution of chromic acid. It was at once taken to the laboratory of Prof. Carl Heitzman, and left with him for microscopical examination for the benefit of the report of this committee. Prof. Heitzman gave the specimen his careful attention, and returned to us four of the best sections, and india ink drawings of two of them ready for publication. His report of the specimens is as follows:

"NEW YORK, April 8th, 1888.

The root of the implanted tooth which you brought for examination a few weeks ago appeared to the naked eye reduced to about one third of its original size. The reduction was caused by deep erosions and irregular cavities that have replaced the original tooth tissues, viz: the cementum and the dentine.

"After the tooth had been softened in a chromic acid solution, the root was cut into thin slabs, and the appearances, under the microscope, were as follows: The dentine is corroded around almost the whole periphery of the root. Only in one place can a trace of cementum be seen. The bordering line of the dentine, toward the excavations, is fluted and made up of crescentic lines, corresponding to bay-like excavations, which follow in varying sizes in large numbers. The dentinal canaliculi, in which the dentinal fibres are still recognizable, terminate abruptly along the concave borders of the bays. Here and there apparently closed spaces of varying sizes are seen at the eroded borders of the dentine. Both the small and large bays and the spaces are filled with a myxomatous granulation tissue in which numerous pretty wide capillary blood-vessels run, mostly filled with blood corpuscles. In places where the bays are shallow a delicate layer of fibrous connective tissue is seen attached to the dentine. The myxomatous tissue holds in many places globular masses of lime-deposits and in some places are seen debris of dentinal tissues with irregular, eroded contours, still holding dentinal canaliculi, and obviously having escaped dissolution. Along one surface the bays appeared to be filled with coagulated serum of blood, in which blood-corpuscles and isolated medullary corpuscles were suspended ; here evidently hæmorrhage had taken place, immediately before the removal of the tooth, that led to the destruction of the granulation tissue. The pulp chamber is lined mostly by primary dentine ; a small portion, however, shows the formation of secondary dentine of the ordinary variety, with scanty and irregular canaliculi. Both the primary and secondary dentine border the pulp chamber with globular masses, pierced by dentinal canaliculi, but showing nowhere excavations like those at the periphery of the root. Toward the apex of the root, where the corrosion of the dentine is most conspicuous, the pulp chamber has disappeared, and the dentine is eaten away to such an extent that only thin ledges of it are seen. The process that has led to such an advanced destruction of the root is the same as that which brings about the absorption and destruction of the root of temporary teeth before shedding.

(Signed) DR. C. HEITZMAN."

Other forms of orals urgery, such as the treatment of antral abscesses, alveolar abscesses, removal of carious and necrosed bone, for the relief of facial neuralgia, are all receiving more attention in dental practice than formerly. Special surgical instruments fitted to the dental engine for the purpose are now to be found in the majority of dental offices.

Prosthetic Dentistry is not backward in the grand progress made by our profession. One fact has, however, deeply impressed itself on the minds of your committee. The very best sentiment of the profession has been loud and definite in its decision, except in extraordinary cases, that non-conducting materials should not be used as a base for upper dentures. While the upper celluloid and rubber plate has been so severely condemned, its manufacture seems to remain just as extensive, and the consequent detriment and injury to the public just as great.

Bridgework, where justified, has come in very considerable favour. It is, however, a subject of great dispute in the profession to-day. Like everything of value, it is overdone.

The dentist who believes that there is but one and only one perfect method of bridework is like his extreme opponent, who condemns the use of bridgework *in toto*. The one sees his bridge as the only panacea for every one the result being he does more harm than good. The other sees only the cases which have resulted in disaster, consequently he condemns the entire procedure. Of all operations in dentistry not one demands such perfection and accuracy in workmanship as a properly constructed bridge. How few of them possess it; and as a result we see so many people going about with mouths so foul in odour that all their friends prefer to keep them at a distance. The so-called cleansing spaces of bridgework are a delusion. The teeth must set firmly against the gum, and the palatal or lingual contour should be perfectly developed. Where practiceable, nothing surpasses the porcelain bridgework of Dr. E. Palmly Browne. Properly inserted, your committee has seen an expert deceived in picking out the bridge from the adjoining teeth. Its permanency has been tested for some years and not found wanting. With our improved continuous gum furnaces the manufacture of these bridges has become very easy.

In crownwork, every passing day brings its changes and improvements from the simpler forms of crowns like the Logan and Browne to the more difficult ones backed and contoured with gold. Like its more complicated fellow, bridgework, an imperfectly placed crown soon has much trouble in store for the poor patient doomed to wear it, and we may be pardoned for changing an old saying into, "heavy the root that wears such a crown." The pus-laden pockets, blind and fistulous abscesses by the thousand, cry out against such a debasement of a noble work.

Labour-saving devices in the shape of electric, water, gas and condensed air motors are in very extensive use, but for many who cannot make use of these means, a great boon has been received in the rubber wheels, rims and foot-pads for the dental engine devised by Dr. C. S. Wardwell.—*The Dental Review.*

Dental News.

EXAMINATION QUESTIONS.—ROYAL COLLEGE OF SURGEONS OF ENGLAND.

At the Examination for Diploma in Dental Surgery, on the 18th June., the following questions formed the "papers":—

ANATOMY AND PHYSIOLOGY.

1. Describe the Muscles of Mastication, and give their action. Mention their vascular and their nerve-supply.

2. Which are the depressor muscles of the Hyoid bone? Give their relations (excepting those of the posterior belly of the Omohyoid), and mention their nerve-supply.

SURGERY AND PATHOLOGY.

3. What are the causes of a stiff Jaw? Give the diagnosis and treatment of each.

4. Whilst a patient is under Nitrous Oxide Gas for extraction of a tooth, the gag breaks, and a piece of it becomes impacted in the Glottis. What would you do? Detail the order of your procedure.

DENTAL ANATOMY AND PHYSIOLOGY.

1. What differences characterize the teeth of various races of Mankind? Judging from dentition alone, what inferences could be drawn as to Man's natural food?

2. Describe the structure, function and distribution of Cementum:—(i) In Man; (ii) Ungulata; (iii) Rodents.

3. Describe specimens A, B, C.

DENTAL SURGERY AND PATHOLOGY.

1. Give an account of exostosis of the alveolar portion of the Maxillary bones.

2. Give an account of Transplantation of Teeth. What are the dangers and sources of failure?

3. What are the conditions which justify the use of spiral springs for the retention of artificial dentures?

What are the precautions necessary for their successful application?

LONDON SCHOOL OF DENTAL SURGERY.

THERE was a numerously-attended conversazione at the Dental Hospital of London, Leicester Square, on Friday July 20th, when the prizes were distributed in connection with the school of dental surgery at the institution. After a reception of the guests, the prize distribution took place in the lecture theatre, the Earl of Lathom presiding.

Mr. Morton Smale (the Dean) read the report. He said

My Lord, Sir Edwin Saunders, Ladies and Gentlemen,—

I am sorry to weary you with any words of mine on this occasion, but it is necessary that I should say a few words to you in the form of a report.

At a similar gathering held last year in the Medical Society' Rooms, it was pointed out that the increased demands made upon this Hospital called for immediate enlargement of the building. During the past year this want has been met, and for the first time in the history of the Dental Hospital of London, the distribution of prizes is held in a hospital somewhat adequate to the requirements of the school.

Thanks to Sir Edwin Saunders, who at all times labours indefatigably for the welfare of this Institution, the improvements brought about by the alterations provide us with this handsome theatre, a stopping or filling room at the top of the house, with no less than 45 operating chairs in daily use, but which to-night is used for the purpose of stopping and filling of a different character,—for it is the refreshment-room,—large and commodious waiting-rooms, extracting-rooms, anæsthetic-room, the room for the Treatment of Irregularities of Children's Teeth, and, in addition, students'-room, and lavatories.

The teaching is of so thorough a character, that it is impossible, or next to impossible, for any student to leave the Hospital an indifferent operator, and I look forward but a short time when I hope to see the public provided with dental practitioners worthy of themselves and of their Alma Mater.

The school continues its prosperous career; there are nearly 100 students on the books, and I am proud to be able to say of them that if their future can be judged by the present, the British public will have great cause to thank this Institute for the admirable work it is doing in its school.

Our school is not altogether like that attached to a general hospital, for after due and careful training, a very large proportion of the operations, which amount to over 4000 a month, are under careful supervision actually done by the students themselves, thus giving them manual dexterity, and at the same time providing the necessitous classes with dental treatment.

At the Royal College of Surgeons, where our students are examined for the Dental Licence (the so-called L.D.S.) our pass list maintains its position, nearly all the candidates having been successful at the second examination held during the year, while a large proportion of our men are taking in addition to their dental qualification the M.R.C.S. and L.R.C.P.

At Charing Cross Hospital, where most of our students receive their medical training (they having in addition to the two years spent here to spend two also at a general hospital) a large proportion of the honours annually distributed have been won by our students. Of our prize list I should wish to say that

The Saunders scholarship so generously endowed by Sir Edwin Saunders, has been won this year by Mr. W. H. Dolamore, he, as you will see by the prize list, having taken all the 1st prizes with the exception of one, and in addition passed the primary examination for the F.R.C.S., so that as is so often the case, our best man is best in every sense ; not only is the best theoretically, but he has taken the operating prize award to the best operator for the year, and he deserved the success that I am sure will follow him through life. I regret to have to announce that Mr. Hutchinson, who for 12 years has been actively connected with the teaching staff, has found it necessary to resign his appointment as Lecturer,—a step we all very much regret,—but hope his successor may fill the position with the same credit to himself and good to the students that has characterised Mr. Hutchinson's tenure of that office.

In conclusion, our thanks are due to you all for the honour you do to us by your presence, especially are our thanks due to the ladies who have graced our gathering, giving encouragement to the victors and vanquished alike,—to the former, of course, their plaudits must go, but to the latter I am sure they would say, if I interpret them aright, as I think I do. All is not over! the prizes of life are still open to you—and many of you in the future it may be, young and inexperienced now, will strive after and obtain that best of all prizes, an honourable name and the respect not only of your patients, but of your professional brethren.

Afterwards the prizes and certificates were distributed by the Earl of Lathom. The chief prize winner was Mr. W. H. Dolamore, who gained the scholarship endowed by Sir Edwin Saunders, the prize given by Messrs. Ash & Sons, and the first prizes in metallurgy, operative dental surgery, dental anatomy, and dental surgery. Mr. Dolamore was heartily applauded on receiving these different awards.

The first prize in Mechanical Dentistry was obtained by Mr. E. A. Manton, and the second by Mr. A. Black. The second prize in Metallurgy went to Mr. F. A. Harsant, that in Operative Dental Surgery to Mr. R. H. Bates, that in Dental Anatomy to Mr. E. A. Manton, and that in Dental Surgery to Mr. J. G. Turner; while certificates were awarded to Messrs. J. H. Day, E. J. Preedy, H. L. C. Hope, A. W. W. Hoffman, H. A. Washbourn, A. D. Horne, F. C. Porter, J. Dunlop, J. A. Mallet, and Mr. A. R. Colyer.

Subsequently the earl of Lathom addressed the assembly. He expressed great admiration for the work carried on at the hospital, an institution which was established 30 years ago in another place, but which had now secured the present fine building. Not only was the hospital to be congratulated on the success of the students, as well as the students themselves upon their efforts; but, as everyone suffered more or less from their teeth, the public generally were also, in his opinion, to be congratulated upon the fact that a number of young men were launched out from that hospital year by year thoroughly practised and skilled in dentistry, and in future he hoped that there would be no chance of people getting into inexperienced hands. There would be no lack of work for dentists, because toothache had existed ever since the world began, and would continue to exist; and he mentioned that the county to which he belonged—Lancashire—was remarkable for the number of people who had lost their teeth, whether or not it was, as some scientific men said, from damp and sandy soil. He thought that the good work that was done at that hospital might be greatly extended with advantage, and he was informed that it was desired to have steam-power in the institution for the instrument known as the drill. At present a pedal was used for the drill, but the motion of the foot interfered with a delicate operation being performed. He suggested, however, in place of steam-power that they should have something in the nature of the machinery that was found in the shops of hair-dressers with someone to turn the wheel, which would be less costly than steam.

The proceedings in connection with the prize distribution terminated with a vote of thanks to the Earl of Lathom, moved by Sir Edwin Saunders, and afterwards there was an entertainment. A phonograph was exhibited during the evening, refreshments being also provided, and the gathering as a social reunion proved very successful.

THE DENTAL ACT AUSTRALIA AND THE PHARMACISTS.

THE following letter has been forwarded to us for insertion :

Sir,—In reference to the recently appointed Dental Board, I think it is due to the present members to explain that the apparent variance between them and the medical members who have resigned is not real.

I believe we feel as strongly as they do the absurdity and injustice of conferring the title of dentist upon men who have no claim whatever to it. But while the medical menbers could show their disapprobation of it by resigning, we could not so easily get out of the difficulty. We were assured that if we had resigned, our positions would be filled immediately by other men who have no claim to be recognised by the dental profession. and in whom the profession have no confidence. It has therefore been our duty to administer the act, and so keep within our own power the future education and training of dentists.

The Dentists Act is not singular in registering incompetent men, for both the Medical and Pharmacy Acts had to admit unqualified persons. And although this act seems to be less stringent than either of the others named, the principle is the same, that pre-existing rights must be considered and allowed.

I think it is about 12 years since the Pharmacy Act came into force, and that was designed to protect the chemists from the unfair competition of ordinary shopkeepers, &c., to guard the public from the danger of poisoning and unskilful dispensing of medicines, and to provide for the future training and education of chemists. How much the body of pharmacists have benefited and advanced by means of their societies and incorporation has been shown by the way in which they have rushed and demanded admission into a profession which their ignorance and presumption lead them to imagine they can practise behind their counters with a rusty pair of pincers and a basin as their stock-in-trade-

I wish to emphasise that it is not a few exceptionally bold individuals who have applied, but they came forward *en masse*, united and determined.

In reminds one of a passage in Carlyle to this effect, that educate, instruct, and improve as you will, " the quack shall in all ages come in for his share."

We are confident, however, that the public will not be slow to learn who are called dentists and who are dentists.—Yours, &c.,

GEORGE THOMSON, L.D.S.

Collins-street East, Melbourne, April 18.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

TIN AND GOLD PLUGS.

To the Editor of the " British Journal of Dental Science."

SIR,—The following correspondence, which is just to hand, settles very clearly the absence of any claim of Dr. Abbott to the use of this combination. My previous statements are more than proved, as the correspondence shows that Dr. Abbott not only has no claim whatever but that he "scouted the idea," and only adopted it after very positive proof that the system was better than his own.

Although not connected directly with the question of gold filling, I retain sufficient interest in the art, and sufficient desire that a good operator with original ideas shall be fairly recorded, to be pleased that my constant advocacy for Mr. Lomax should be so thoroughly proved to be correct, and it is well that the matter should be so clearly settled.

THOMAS FLETCHER, F.C.S.

Warrington, July 13th, 1888.

(Copy.)

1, Burlington Street,
Oxford Street, Manchester,
July 10th, 1888.

Dear Fletcher,—Visiting Manchester for a few days, I have had my attention called for the first time to some lectures on the subject of Gold and Tin Fillings by Dr. Miller, of Berlin.

I notice the claim made to the discovery for this mode of filling by Dr. Miller for his father-in-law, the late Dr. Abbott, of Berlin, and your letter asserting that fillings made by me were well before the public long before the date named as the time Dr. Abbott *discovered* this mode of practice.

Enclosed you will find two notes sent to me by Dr. Miller, inspired no doubt by your letter. In my reply, I stated that in 1853 I called on Dr. Abbott, and amongst other subjects, discussed the merits of gold and tin as a filling. that he scouted the idea as being absurd, nothing but gold being admissable as a filling, according to his belief. After that time, Dr. Abbott had opportunities of seeing many fillings made by me with gold and tin, and I was aware of his afterwards trying the same in his own practice. I will now state to you how it came to pass that I first used gold and tin as a filling. About 1845 or '6, Mr. Gidney, who practised here, and who paid much attention to the filling of teeth, used to employ tin for large cavities in bicuspid and molar teeth. These fillings were very well made, but when on a masticating surface I noticed they quickly wore down and assumed a cuplike shape, the edges of the cavities becoming exposed, and eventual failure being the result. Noticing the merits of tin as a filling, I thought by adding gold to that material I should probably get over the defect of softness. You and many other Dentists must be very familiar with the result, and I dare say most of my dental friends are weary of hearing me advocate the merits of gold and tin, which I did both in and out of season.

I send the two notes from Dr. Miller, with a translation of the one in German for your perusal,—notice the dates,—return to me at your convenience. I thought you might like to have these particulars, as your letter told me you took a sufficiently lively interest in the subject to prevent any little merit there may be in the application of gold and tin as a filling being diverted from its true source.

I am, dear Fletcher, yours truly,
(Signed) JAS. W. LOMAX.

(Copy.) January 17th, 1888.

Dear Madam,—I should be very much obliged if you could let me know if Mr. James Lomax, of Manchester, still practises, and if he was acquainted with my father-in-law; and if he used tin and gold for filling teeth. You must forgive me for asking so many questions at the same time. It is a question if it were Mr. Lomax, of Manchester, Dr. Abbott, of Berlin, or Dr. Spooner, in America, who first used the now celebrated combination of tin and gold.

(Signed) Prof. MILLER.

(Copy.) January 24th, 1888.

Mr. James Lomax,

Dear Sir,—Allow me to thank you for your kind response to my enquiries. I would still like to ask whether you have found that the combination is sufficiently hard to withstand mastication on the grinding surface? Also how you account for the hardening of the material? 3rd. What effect moisture has upon the filling, that is, is the filling materially injured by the access of saliva during the operation? 4th. In what way do you think the gold deteriorates by lying in contact with tin? 5th. Do you fold the tin or the gold outside? Will you allow me to make use of your letter and your answers to the above questions in any communications that I may make upon this subject to the journals?

With many thanks for your kindness, I am, dear sir,

Very truly yours,

(Signed) W. D. MILLER.

HICKMAN *v* CRABTREE.

To the Editor of the "British Journal of Dental Science."

Sir,—In your issue for July 2nd, page 644, there is an account of the case of Messrs. Samson Ralph Hickman *v.* Edwin Crabtree, being before the County Court in Manchester. Mr. Hickman is not a dentist. He is not on the Dental Register, neither does he put the word "dentist" on his show case; door plate he has none. There are in Manchester many of the same stamp. In county towns, such as Preston, Great Harwood, and Haslingden, men can be found who have the word "dentist" on their door plates. If the public only knew that these men were not dentists, their calling as dentists would be gone. Looking at the profession as it stands, with "Dick, Tom, and Harry" putting the title "dentist" on their doors, what individual will send a son to college, when a Jew can leave off selling old clothes, a weaver leave his loom, and a tinker his soldering-iron, and stick "dentist" on his door?

The dentists have no one but themselves to blame. It would be very easy for the dentists in these country towns to unite, and make it known that these men are not responsible dentists, that they were outlawed by the Dental Act, that they are law-breakers. The public would not countenance such men if they were aware of their true position. Unity among the dentists would be far better than prosecution. There need be no prosecution; the lawlessness of these pseudo-dentists, when known, would be their final doom.

I am, sir,

Yours, &c.,

CHARLES AUDLEY.

Hospital Reports.

Work done at the Victoria Dental Hospital of Manchester during the month of June, 1888 :—

Number of Patients attended		1100
Extractions	Children under 14	622
	Adults	
	Under Nitrous Oxide	20
Gold Stoppings		124
Other Stoppings		154
Miscellaneous		326
Total		1246

Charles H. Smale, L.D.S., Eng., *House Surgeon.*

A Fragrant Antiseptic Mouthwash.

Saffrol	ʒ iii
Oil of Pinus Pumilio	℥ ii
„ Curacoa	ʒ ii
„ Vetivert	♏ 24
„ Anise	♏ vi
„ Rose, Geranium	♏ vi
Naphthol	ʒ i
Deodorized Alcohol	℥ xxiv
Saccharin Solution [gr. iv to ʒ i]	℥ ss
Glycerine	℥ viii
Purified Talc	℥ ii

Water to make 6 pints.

The essential oils and the naphthol are dissolved in the absolute alcohol, the glycerine added with the purified talc, the 3½ pints of water at 122 F. The contents are shaken until cold. Then filter through a netted filter, retaining the first portions of the filtrate until it runs through clear, and pass enough of water through the filter to make the product measure 16 fluid ounces.

APPOINTMENT.

Mr. Arthur P. Penrose, L.D.S, has been appointed Dental Surgeon to the Islington Dispensary vice Mr. Llewellyn Davies L.D.S. resigned.

Communications have been received from:—

Mr. C. Smale, Manchester; Mr. Daniell; Mr. Felix Weiss; Mr. Willoughby Weiss; Secretary Dental Hospital of London; Secretary National Dental Hospital; Mr. Penrose, London; Professor Victor Horsley; Mr. Thomas Fletcher, Warrington; Mr. Audley; Mr. Denison Pedley.

BOOKS AND JOURNALS RECEIVED—

Dental Cosmos; Independent Practitioner; British Medical Journal; Pharmaceutical Journal; Western Dental Journal; Odontographic Journal; Ohio State Journal of Dental Science; Dental Record; Dental Review; American Journal of Dental Science; L'Odontogique; L'Art Dentaire; Correspondensblatt für Zahnartze; Nursing Record; Items of Interest; Archives of Dentistry.

ANSWERS TO CORRESPONDENTS.

Mr. Denison Pedley.—You should have sent us an early proof for simultaneous publication. We cannot now publish your paper.

To Anonymous Correspondents.—We must again draw attention to our rule that we cannot notice anonymous communications.

British Journal of Dental Science.

No. 494. LONDON, AUG. 15, 1888. VOL. XXXI.

THE COMMENCEMENT OF MALIGNANT DISEASES OF THE TONGUE, JAWS, AND MOUTH.

By FRED. BOWREMAN JESSETT, F.R.C.S., Eng.
Surgeon to the Cancer Hospital.

(*Continued from page* 702.)

Epithelioma of the jaws is not at all an uncommon affection, and yet I have seen numberless cases which have not been recognised as Epithelioma, until the disease had extended to such an extent that little was to be done for it, the glands in the submaxillary space and neck had become infiltrated, and the patient in a hopeless condition.

These cases, many of them had been treated by the frequent application of nitrate of silver, sulphate of copper, and the like, the constant irritation set up by these caustics having simply caused the disease to extend more quickly, and with greater virulence than it otherwise would have done. In other cases the patient had been treated for syphilitic affection with Iodide of Potash, Mercury, &c. internally, while some mouth wash had been directed to be used locally. How many cases one sees in which, if the true character of the affection had been recognised in the early stages, the disease might by bold treatment, have been cured.

Now there is no doubt there often is clinically great difficulty in distinguishing between the disease we are discussing, and syphilitic ulceration, or some cases of ulcerative stomatitis, yet if care is taken to enquire into the history of the case, and to examine how it commenced, there is usually but little difficulty in arriving at a correct diagnosis as to the true character of the ulceration.

Supposing then a case presents itself of an ulcer of the gum, how are we to decide what its character is? Usually the nature of the ulcer will be sufficient to enable the surgeon who is in the habit of seeing these ulcers to determine whether it is malignant or not. Epithelioma is usually in the form of an ulcer with hardened base and irregular everted edges, bleeding somewhat readily, with an irregular nodular floor, the patient will tell you it commenced probably with a minute tubercle or warty growth either in the interior or exterior of the gum as the case may be, that it troubles him very little, but looking upon it as a something that should not exist, he had applied caustic several times, the result being that the small tubercle soon became ulcerated, and had then commenced to increase somewhat rapidly, the edges had become hardened and everttics, and caused some little pain. More caustic being applied it still increased until now it had invaded the mucuous membrane of the cheek, the flow of the mouth and hard palate, according to the position of the injured tubercle.* The periosteum would soon become affected, and the ulcer fixed. Had this been syphilitic, other symptoms of the disease would have manifested itself in the system, the ulcer would not have been of the same character, the edges would not have been everted, and the ulcer would not have become so quickly fixed to the bone, moreover a few doses of Iodide of Potash would speedily have made the ulcer take in a more healthy aspect, and it would have then commenced to have healed. Had the ulcer been due to stomatitis, the digestive system would have been found to be out of order. Patients suffering from this disease are usually young. The ulcers are not so deep as in Epithelioma, but have a tendency to spread very rapidly. There are usually several small ulcers about the gums and mouth. A little aperient and stomachic medicine speedily causes the ulcers to heal.

Sometimes, however, these Epithelimatous ulcers commence quite at the socket of the tooth. Not very long since, a patient was sent to me, by a dentist, on account of an irregular ulcer that had only shown itself after the extraction of a tooth. The patient had suffered a good deal of pain about this tooth, and consulted a dentist who found the tooth apparently sound, but on tapping it, or the patient biting upon it, much pain resulted. The tooth was therefore extracted, when a slight ulceration was noticed. Little attention was paid to this, the ulcer, however, increased, and again the dentist was consulted, and he treated it for awhile, when finding it did not attempt to heal, and the ulceration increased, he became anxious, and sent the patient to me. In this case, from the history of the case, the age of the patient, the fact that notwithstanding all treatment the disease extended, and from the character of the ulcer, I gave it as my opinion, that we had to deal with a case of Epithelioma, and the sooner the disease was removed the better. The patient consented to the operation, and I removed with the bone-pliers a good part of the alveolar process, and all the gum attached to it, pulling out the two teeth, one on either side. The patient consenting, this operation was carried out, and the patient made a good recovery, and two years after was quite free from all disease.

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* The Patients are usually passed the age of 40.

If then, a case over 40 years comes under your notice, with an ulcer of the kind described, if you are in any doubt, by all means try anti-syphilitic remedies, say for a fortnight; if at the expiration of that time the disease still increases, and shows no sign of healing, do not waste more time, but at once remove the disease very freely, taking care to include the portion of bone contiguous to the ulcer on either side, and all probably will end well Delay it longer, and you will be too late.

It is not uncommon to find this disease mixed with sarcoma, that is, you will find columns of small round cells, with stroma in which sarcomatous tissue is mixed.

The following case is typical :—

J. L. ætat, aged 60, a Chelsea pensioner, was admitted into the Cancer Hospital on August 20th, 1883, suffering from Epithelioma of the anterior part of the lower jaw, the disease corresponding in extent with the incisor and canine, and first bicuspid teeth, extending along the floor of the mouth as far back as, and implicating the power of the tongue, the sublingual gland being also affected.

The precise history was as follows :—About three months before admission he noticed a small swelling near the left lower canine tooth, for which he had the tooth extracted. The swelling, however, increased, and he suffered great pain. The submaxillary gland on the right side shortly became enlarged, and the growth increased rapidly along the gums and floor of mouth—he was a great smoker—there was no history of syphilis.

Present state. Gums spongy and unhealthy, several stumps of teeth, as well as the teeth themselves, are loose, the

the alveolar process being evidently eaten away by the growth, which extends under the tongue; it is chiefly situated on the left of the jaw, from the bicuspid tooth on the left side to the canine on the right side, implicating the power of the tongue, and mucous membrane of the floor of the mouth. The sublingual gland is enlarged and indurated. The submaxillary gland on the right side is swollen and painful.

This case had it been treated in its early stages might have easily been dealt with and cured, but the chemist who in this case, extracted the tooth took no account of the ulcerated condition of the gum, and told the patient it would soon get well as soon as the tooth was removed, such as we see was not the case, and the man at the time he came under my care was in a lamentable condition.

I advised him to submit to an operation, and on August 20th, 1883, he was placed under æther, and I endeavoured to remove the growth with the gouge and chisel, but it so deeply implicated the jaw, that I found it necessary to remove a portion of that bone. This I did by dividing the lower lip in the middle line to the chin, and dissecting the soft parts from the bone, and sawing through the jaw in the left side at the second bicuspid tooth, and on the right side at the canine tooth. I detached the pieces of bone, and cleared the floor of the mouth of the diseased structures.

There was some free hæmorrhage which was, however, readily controlled. I brought the lip together with harelip pins, and left the cut ends of the maxilla as they were.

The man did well, he kept his mouth constantly washed out with a weak solution of carbolic acid, and was fed on beef tea.

The interval between the bones speedily filled up with fibrous tissue, which was, however, somewhat retarded by a small piece of the ends of the bone necrosing.

The man made an excellent recovery, and when seen last had had no return of the disease.

Epithelioma of the gums and jaw is not uncommonly found to be secondary to similar disease extending from lips, tongue, or floor of the mouth, when such is the case its character is readily recognised, and nothing but the most radical operation is of any avail, and although as a rule patients make good recoveries from such operations, yet it is rarely that the disease is thoroughly eradicated, and it usually recurs very speedily, so that it becomes a most serious question with the surgeon in this advanced stage of the disease, if it is justifiable to subject a patient to so severe an operation with only a very slight hope of the disease being wholly removed.

In concluding these very brief remarks on malignant diseases of the gums and jaws, it will be well to enquire a little into the causes of the disease, for I take it that we very rarely meet with cancerous disease of these or other parts of the body without there is some source of irritation existing which originally was the cause of the tissues taking in an unhealthy growth. Yet considering the large number of persons who suffer from carious teeth, it would be absurd to attribute to this cause alone the origin of the disease. We must then, I think, look further, and ask ourselves why one person should develope a sarcomatous or carcinomatous growth, while another under precisely the same condition escapes. It is an undisputed fact that nearly in every person suffering from either of these two diseases, the starting-point will be found at the seat of an old stump or a carious tooth. Why should this anomaly exist? To answer this question it is essential that we should arrive at some definite conclusion as to the cause and nature of the disease. We must then agree as to whether cancer is a purely local affection, or if it is due to a diseased condition of the blood, or whether it is a combination of the two. I am firmly convinced the latter is the correct view, *i.e.*, there is a morbid condition of the blood which is ready at any moment to take on a malignant action at very slight provocation, a blow on the breast, a constant irritation of the tongue from a carious tooth, or the rough end of a pipe, a kick on the shin, or a burn on the lip are all sufficient to cause a cancerous tumour or ulcer to form in a person possessed of the morbid condition of the blood suitable for the development of cancer. That this condition is often unheeded is, I think, now sufficiently corroborated by statistics. Thus the Surgical Register of the Middlesex Hospital reports in 132 cases of cancer that had been under treatment at that Hospital during the year 1882. He says, With regard to the occurrence of cancer, it was found that in 34 cases of uterine cancer, there was a history of previous malignant disease in eight families, or 23.7 per cent; in 41 cases of breast cancer, a family history existed in 10 families, or 24.3 per cent, in 28 cases of cancer of the tongue, mouth, and lip, family history of the disease also existed. These statistics are more than confirmed by those obtained from other

Hospital reports. In my own practice at this Hospital of 194 cases of cancer of various parts that have come under my care, 69 had a distinct history of malignancy in their families, or 35.5 per cent. In my private practice I have found, inheritary tendency to the disease in a fraction over half the number of patients seen.

This has been further corroborated by the investigation of the Committee appointed by the British Medical Association concerning cancer of the breast. One hundred and eighty-four of the two hundred and ten returns, contained definite statement under this head. Of these 116 were to the effect that there was no family history of cancer, 68 that cancer had occurred in other members of the patient's family. The proportion, therefore, is more than one in three, or about 34 per cent, a fact of great interest when studied by the side of the experience of Sir James Paget, and my own observation.

It is not my intention to go further into this subject here, but sufficient has been said to justify me in greatly urging on the Dental profession the responsibility that is often placed upon them when patients consult them, and I would urge most strongly, the desirability of their urging the early removal of all stumps of teeth which may be found to be irritating the gums, and if at any time fungoid growth or ulceration is found to exist around any decayed tooth or stump, and there is found to be an hereditary tendency to malignant disease, do not waste a moment, but remove such stump or decayed tooth as speedily as possible, and if others are found to exist in the mouth, extract them also, and further instruct such a patient to present himself from time to time for inspection, and should there be the slightest tendency in the part of the growth to increase, do not hesitate to advise its complete and thorough removal.

(*To be concluded.*)

SANITAS OIL DEODORISES IODOFORM, according to Mr. James Startin, "Sanitas" Oil completely covers the disagreeable smell of iodoform, of which it is a good solvent.

ARTISTIC MECHANICAL DENTISTRY.

By Francis P. Hamlet, D.D.S, Hempstead, N.Y.

A Prize Essay reported especially for the *British Journal of Dental Science.*

Mechanical Dentistry has been so often discussed, that it seems hardly possible to say anything new and interesting about it.

Even while considering the subject, in its most favourable attempts, we feel that it has not arrived at the "perfect mechanical," and the "perfect artistic" stage in any particular.

Let us review the subject from the time when it was first put in "cold type," and see what we have and what we have not, what has been done, and what will yet be accomplished.

The first publications, illustrating with wood cuts, the principals and processes of Mechanical Dentistry, appeared in the American Journal of Dental Science in 1840. They were written by Dr. Solyman Brown, (father of the present Dr. E. Parmley Brown of New York), who was the first managing editor of that Journal, (the first ever dedicated to the interests of dentistry), at that time living in New York.

Previous to that, the secrets of the dental art were kept very close, seldom was one dentist allowed to enter the laboratory of another.

Such was the feeling at the time of the first publication, that even so eminent a man as Dr. Hayden, of Baltimore, Md., strongly opposed giving to the world the knowledge that he and others had laboured hard to obtain. So great was his opposition, that he went to New York, expressly to prohibit, if possible, the issuing of a dental publication.

At that time, gold and silver were the only materials used to retain artificial teeth in place, and the porcelain teeth, though strong, were not so translucent and life like as they are to day.

Soon came Dr. Allen's continuous gum upon platina base, which gave increased opportunities to the dental artist. By that he was enabled to display a greater degree of prosthetic skill in substituting artificial for natural dentures.

Plastic bases were introduced, first Rubber then Celluloid, and besides these, we have to-day, a variety of bases into which we attach artificial teeth, some are easily made, others more difficult, some are cheap, while others are expensive.

It is the general opinion, that all the present materials, on which artificial teeth are placed, will ere long be displaced by the "ideal base." Of its coming, I have no doubt, and I hope it won't tarry long on the way. Judging from the many advancements already made in every branch of dentistry, we have substantial reasons to build our hopes upon, for a more perfect base in the near future.

The "ideal base," should be, above all else the colour of the gums, combining strength for the purposes to which it is to be applied. It should be a better conductor than rubber or celluloid, and more plastic to manipulate, and by all means, less injurious to the teeth than cast or swaged metals, it should be lighter than continuous gum, more perfect than rubber, and less destructable than celluloid, a base in fact upon which plain teeth can always be used, doing away with the stereotyped gum blocks, with their objectionable joints, and unlifelike appearance.

The highest artistic point of artificial substitution, cannot be attained until porcelain teeth are manufactured, that are as lifelike by daylight, and gaslight, as the natural teeth.

"The height of art is to conceal art." That man who imagined himself deaf, while looking at a fine painting of a flute player, evidently had found a work of art that was true to nature.

So with artificial teeth, which are inserted, and do not deceive the eye of even a dentist, are not what Dental art should be.

The dentist at present, has many difficulties to contend with. He finds it necessary to insert smaller teeth, than could be used if the artificial were exact counterparts, in form and translucency, of the natural organs.

In many cases he must sacrifice some point of artistic effect, for the more practical features, of proper fit and usefulness, of the denture of the patient.

For instance, in many cases, a desirable fullness of features cannot be obtained, (the muscles and lack of suction interfering with it). The useful being paramount to the artistic, *the artistic must suffer*.

A great obstacle, however, to the production of lifelike teeth, is cheapness, commencing with the manufacturer and ending with the dentist.

The manufacturers say they do not make any profit from the prosthetic dentist, who buys but one set of teeth per month, therefore, they cannot cater to his taste. They make their money out of the cheap quack, who buys two sets per day.

Until the prosthetic dentist demands a superior tooth, and cheerfully offers a higher price for it, he cannot get a more perfect and desirable article.

The advent of celluloid, having made the use of plain teeth æsthetically admissable, has opened a new field of art for the dentist.

Celluloid makes possible the most beautiful and artistic work ; it copies nature more truthfully than any other plastic material now used, it enables us to set the teeth directly under the ridge, and thus prevent the unnatural position of the teeth, and tilting of the plate in biting. By its use, we can imitate and festoon the gums in a more natural manner.

But often the worker in celluloid will find many important artistic points, clashing with other principles, and the problem whether to sacrifice utility or art becomes very difficult to solve.

Under these circumstances it is necessary that the artist be a close observer of nature, hence, this question often presents itself. What is meant by an Artistic Mechanical Dentist?

He who possesses artistic mechanical skill and has an eye to the beauty of form and proportion, and who exercises his ability, in the arrangement of artificial teeth, as to the matter of antagonism, etc.

Much of personal beauty, and character depends upon his construction of an artificial substitute. He must, to accomplish these results, closely study the form, figure, size, temperament, and complexion of his patient, then *carefully select* the teeth, giving particular attention to colour, form, size and translucencey, etc.

These are considerations of the greatest importance for accomplishing what, in our advanced stage of mechanical skill, is termed "Artistic Mechanical Dentistry."

Harmony and utility must command attention and obedience to these principles, will secure for those who need them, a fit substitute for the natural dentures.

We can do much in changing and bringing back the original form and expression of the face where malformation and actual deformity exists, indeed it is in cases like these where we seek the most noble achievements of our profession.

Moulding, sculpture, and colouring of mineral teeth and gums, require the exercise of much artistic skill, in order to faithfully and justly represent the handiwork of nature.

But this is merely a glance of what we deem essential. It is in their adjustment and adaptation to the mouth and face, that a genuine artistic skill and scientific attainment, are absolutely necessary.

In considering the arranging and setting of the teeth. Is there *anything* which gives such an ugly, and unnatural an appearance, as antagonising teeth, so that the incisors occlude at their cutting edges, instead of the uppers over-reaching and over lapping the lowers.

How quickly will the artist detect even the minor defects.

Much care should be employed in festooning the gums, and in bringing out the character and expression, of each individual tooth; for instance, the laterals should be on a lower level than the centrals, and the cusps of the canines, while the curves of the arch must be graceful and expressive.

Another important point, is the curve, on the grinding surface, or the slope of the alveolar ridge. Notice, that this peculiar shape of the arch is the great mechanical agent, which assists largely in masticating the food, the lower teeth curving in or down, and the uppers *vice versa.*

The opposite of all this, is seen in the work of charlatans. Such work is characterized by unevenly arched festoons, inter-dental spaces cut out in V shape, so offensive to the artistic eye, laterals on a line with the adjoining tooth, etc. etc.

In arranging the bicuspids and molars, a too common divergence from a regard for appearances manifested in nature, is seen in the misplacement of these teeth, especially the bicuspids, by extending them outwardly too much, thus giving them the prominence, which belongs to the canine, and presenting the appearance of a mouthful of teeth.

The use of celluloid must be acknowledged, is surprisingly, beautiful in the hands of some. Drs. Campbell and Graves of America, have given the profession apparatus for this work, the success of which recommends them, and with the latest theories for its manipulation by dry heat, between metal moulds, the work has become interesting and pleasant, while the celluloid has been improved.

The stippling of the gums, so fascinating to the dentist, and attractive to the patient, perceptibly improves the natural appearance.

Rubber has been largely used by the best men in our profession, but of late it has been brought into disrepute by the misfits, and bungling work of charlatans. There are many disreputable things that could be justly said in regard to its injurious effects upon the membranes of the mouth, and many times poisoning the whole system.

Careful attention *must* be given to the finishing of a plate especially rubber, in order to have perfect smoothness.

We all know where two parts of the body touch and move upon each other, they are of extreme smoothness, so much so that it is impossible to obtain anything equal to it. Therefore the mucous membrane of the mouth must have a surface approximating, as nearly as possible, that which nature provides.

Constructiveness lays the foundation for mechanical taste and skill : from its exercise nearly everything that adorns and blesses life proceeds. Looking around we can see but few things which artistic and mechanical skill have not produced.

Suppose men were deprived of all this mechanical talent, how could they adapt themselves to the appliances of art, and the demands of their profession.

Then as dentists, our object should be, in inserting artificial teeth on *plate*, *bridge*, or whatsoever, to *hide* the artificial, by bringing into view boldly, the designs of nature.

There is no sphere of labour that calls for a greater showing of intellectual and mechanical effort, than ours. By the intellect we perceive what is needed ; by mechanical skill, we produce and apply it ; one is the mutual supporter of the other. *Let us seek to develope both.* You fully appreciate what "Artistic Mechanical Dentistry" does for facial beauty, for the alleviation of pain, and for the promotion of health.

If these be made the primary objects, the blessings of the afflicted will fall thickly upon us.

NOTES OF TWO CASES OF REFLEX PARALYSIS OF ACCOMMODATION OF THE EYE, WITH MYDRIASIS, DUE TO DENTAL IRRITATION; WITH OBSERVATIONS UPON THEIR SUPPOSED BEARING ON THE QUESTION OF THE PATHOGENESIS OF SYMPATHETIC OPHTHALMITIS.*

By Samuel Theobald, M.D,
One of the Surgeons to the Baltimore Eye, Ear, and Throat Charity Hospital.

Case I.—Mr. J——, a merchant, aged twenty-six, who had never had syphilis, and who had had no previous trouble with his sight, on July 1, 1873, sought advice on account of a disturbance in the vision of his left eye, of twenty-four hours duration. The pupil of the affected eye was found to be dilated, and upon testing his near vision, almost complete paralysis of the accommodation of this eye was discovered. Its distant vision was $\frac{20}{xxx}$, but its near vision so poor that J. No. 10 could be read with difficulty at 12". In searching for a cause for this sudden impairment of vision, I learned that for some time he had been annoyed by the existence of a suppurative inflammation about the root of the left, upper, lateral incisor tooth, the nerve of which had been previously destroyed by a dentist. The tooth was decayed, but was not painful, although there was a constant discharge of pus from its socket. However, for several days before the appearance of the eye trouble, and after exposure to wet and cold, pain of an unusual character to the patient, who was not subject to neuralgia or rheumatism, was felt in the face and head.

It seemed to me highly probable that the tooth was the cause of the ocular paralysis, and I therefore advised that it should be extracted, which was done three days subsequently, on July 4th. I also prescribed ten grains of iodide of potassium, to be taken three times a day, and a blister to be applied to the forehead. No change for the better had taken place when the patient was next seen (July 8th). I then directed an ointment, containing equal parts of extract of calabar-bean and lard, to be rubbed upon the forehead and brow at night; and on the 13th ordered, in addition to the ioidide, $\frac{1}{24}$ grain of sulphate of strychnine, to be taken three times a day. On the 18th I began the daily application of the faradic current. The use of the calabar-bean produced temporary contraction of the pupil and increase in the accommodative power, but no appreciable improvement had manifested itself up to the 29th, at which date I decreased the dose of iodide of potassium to five grains, and gave in addition $\frac{1}{48}$ grain of biniodide of mercury. Within a few days after this the condition of the eye began to improve, and by August 4th he was able to read with it J. No. 6, and the size of the pupil had lessened very perceptibly.

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*Abstract of a paper read before the Clinical Society of Maryland, January 20, 1888.

The patient was seen again August 31st. The left pupil was then of the same size as the other, and he reported that the sight was again all right, and that it had been so for about ten days. He had continued to take the remedies for awhile. He is now perfectly well.

CASE II.—Mr. M——, thirty-five years of age, was first seen on October 19, 1885. He had been conscious of something being wrong with his right eye for about two weeks. There had been no decided pain, but discomfort as though it were swollen. He denied syphilis, or rheumatism. He was of a nervous temperament. Upon testing the vision of the affected eye, the pupil of which was only slightly enlarged, complete paralysis of accommodation was discovered; the lids were also perceptibly retracted, so that the palpebral aperture appeared larger than that of the other eye—the effect being just such as we are now familiar with from the instillation of cocaine. Upon testing the responsiveness of the pupils, to my surprise, they were *both* absolutely motionless—neither in response to varying degrees of light, nor during changes in accommodative tension, did either undergo any perceptible alteration in size. The patient noticed that his taste, especially for sweet things, was impaired. The distant vision of each eye was nearly normal, (?), and with the left eye he could read J. No. 1. With the right, however, he could with difficulty make out J. No. 11, and could do this only by holding the page off to about 18″. The ophthalmoscope showed the fundus of each eye to be healthy and the media clear. Upon further investigation, it was seen the crown of his right upper lateral incisior tooth had been broken off, and that about the root, which remained, and which was probably dead, there was considerable inflammation, the alveolar process over it being swollen and sensitive to pressure. The appearance of the gum suggested the existence of a fistulous opening from the alveolus, although he was not aware that there had been any discharge from the tooth.

He was advised to have the offending tooth extracted This he did at once, and on the following day there was not only a diminution in the swelling and tenderness of the gum, but a perceptible improvement in the accomodation of the eye, J. No. 9 being read tolerably well, and even some words of J. No. 8. This change, it will be observed, took place before any treatment, except the removal of the tooth, had been employed. At his second visit (October 20th), I prescribed for him biniodide of mercury (gr. $\frac{1}{32}$) and iodide of potassium (gr. j), three times a day. Subsequently the dose of biniodide was increased to gr. $\frac{1}{24}$ and then to gr. $\frac{1}{16}$, and that of the iodide of potassium to gr. v. Strychnia was also given in doses of gr. $\frac{1}{24}$, three times a day, and an ointment of mercury and extract of opium was ordered to be applied to the forehead and temples at night. A few applications of eserine were also made to the eye, and their immediate effect upon the pupil and the accommodation was very decided, but they were soon discontinued, as they evidently had no curative action. On the 27th he reported an improvement in his taste (especially for sugar), but as yet there was no appreciable change in the pupil or farther improvement in the sight. On November 23rd the murcury was discontinued, as his bowels were disturbed by it, and the iodide of potassium given by itself; a blister was applied to the right temple. On the 25th the right pupil, for the first time, responded perceptibly to light, but not until December 1st did the accommodation begin to show decided improvement. In the meantime the strychnia, which he had been taking for several weeks, had been discontinued, and syrup of phosphate of iron, quinine, and strychnia substituted. On December 12th the iodide of potassium was omitted. On December 30th the right eye was able to make out some words of J. No. 1. On January 5, 1886, I observed that the right pupil was smaller and rather more responsive to light than the left, and upon testing the far and near point of each eye with a $+\frac{1}{16}$s. lens, I found that there was but little difference between the two eyes, and that the range of accommodation in each was below what it should be. The result obtained was : L.E., $\frac{1}{A}=\frac{1}{81}$; R·E., $_{A}=\frac{1}{91}$. All treatment was now discontinued. A week later the right eye could read J. No. 1 with ease at 9″, and this was also the near point for the left, and the pupils were of the same size and equally responsive to light. Some time before this the retraction of the lids of the right eye and the impairment of taste, to which reference has been made, had disappeared. On February 2nd I tested the eyes for astigmatism, finding in each Ah. $\frac{1}{36}$, for which I prescribed plano-cylinders. At this visit the left pupil was observed to be larger and less responsive to light than the right. On February 5th this difference in the size of the pupils was more decidedly marked, and the left one showed no perceptible response to light. The range of accommodation of each eye was again tested, and now the right eye was found to have the advantage, the result being L.E., $\frac{1}{A}=\frac{1}{91}$; R.E.. $\frac{1}{A}=\frac{1}{67}$. He was now complaining of tenderness and discomfort about the left, lower, anterior bicuspid tooth, the nerve of which had been destroyed, and which his dentist had recently filled, after treating an abscess at its root; and as the mydriasis and failure of accommodation in the left eye were becoming more and more pronounced, he was advised to have this tooth removed. This he consented to do, and on February 11th it was drawn. The accommodative power of the left eye, however, continued to decline, and by March 1st he could with difficulty read J. No. 3 with this eye, even with the aid of his astigmatic glass ($+\frac{1}{36}$c., ax. 80°). With the originally affected eye, the right, he could read J. No. 1 with ease.

There were still several other teeth in his mouth the nerves of which had been destroyed, and which were giving him considerable discomfort. One of these was a right upper molar, which had been filled in three places, and one of the fangs of which was exposed, at the side of the alveolar process, nearly to its extremity; and another was the left lower canine, which contained one filling, and was sensitive to pressure over its root. In addition to the disturbance in his vision, he had a great deal of headache, and pains at times in the facial branches of the fifth nerve. On March 1st these two teeth were removed, and this was followed by the immediate disappearance of the headache. Two weeks later the left pupil had regained its normal size, and responded fairly well to light, but with this eye he could, as yet, hardly read J. No. 4. However, a steady improvement now set in, and by April 5th the left eye could read J. No. 9, but only when it was held at about 16″ from the face. On May 1st it could read it at 7″, almost as close as the other eye, and the left pupil was now rather smaller than the right. On June 8th he reported that since his visit to me, six days before, the dentist had been treating another dead tooth (a left lower incisor), and had found it necessary to remove the filling from it, and that in consequence severe inflammation had ensued, accompanied by swelling of the face and a considerable amount of fever. Coincident with this attack, he observed that the right pupil became enlarged, and that his near vision grew less distinct. The dilatation of the right pupil was still quite marked when I saw him, but he was able to read J. No. 1 with each eye. I advised him to get rid of this tooth also, which he did; and a week later, when he paid me his last visit, the pupil was considerably smaller and the accommodation restored to its previous condition. It will be observed that after the discontinuance of the constitutional treatment, on January 5th, it was not again resumed, and that the recovery of the second eye took place without resort to any remedial measures, except the removal of the dead teeth.

About six months after his last visit to me (December 1886), and coincident with the occurrence of irritation and tenderness about another of his dead teeth, the sight of his left eye, he told me, had again become affected, and the pupil enlarged. At this time he was induced to seek the advice of a specialist of great popular repute, who, according to the patient's account, made light of the dental irritation theory to which I had attached so much importance, assured him that the degree of astigmatism (Ah.$\frac{1}{36}$) which he had, was of no account, and advised him that he required no treatment except the selection of proper glasses. Thereupon he proceeded to determine what these were, and as a result of his tests, he prescribed for near vision: for the right eye, $+\frac{1}{48}$s.; for the left eye, $+\frac{1}{15}$s. Presumably, these glasses were intended to equalize the vision of the two eyes, the accommodation of the left being defective. However, as the difference between the accommodative power of the eyes did not long remain as it was when the glasses were prescribed, they, of course, soon became useless and were thrown aside, the cylinders being resumed, to be worn, up to the present time.

In Case II. there was at least one striking example of reflex ocular disease due to persistent irritation of a branch of the fifth nerve. That the direct cause of the ocular paralysis was not situated in the affected eye itself, but in some ganglionic centre back of it, there is, little room for doubt; and such doubt as might exist upon this point seems to be dispelled by the decided effect upon the pupil and the ciliary muscle which was produced by the instillation of eserine. It is, perhaps, scarcely possible to locate with certainty this centre, but, at any rate, it does not seem *necessary* to go further back than the ophthalmic and gasserian ganglia, in order to explain all the observed phenomena, including the impairment of the sense of taste; for in the former we have a connecting link between the fifth nerve and the third, and with those branches of the latter, especially, which supply the iris and ciliary muscle, and in the latter the gustatory nerve is, of course, in relation with the other sensory branches of the fifth. As to what was the exact nature of the changes which occurred in the centres involved, in consequence of the persistent irritation of the dental nerves, we are also not in a position to speak with certainty; but, we are, I think, warranted in assuming, at least, that they were structural in character, rather than simply vaso-motor, from the slowness with which the ocular paralysis disappeared after the removal of the original source of irritation.

That there is a very close parallelism between the sequence of events which must have taken place in this case and that which occurs, according to those who believe that the disease is a reflex neurosis, in sympathetic ophthalmitis will, I think, scarcely be denied. In the one case we have, as a result of persistent irritation at the peripheral extremity of branches of the dental nerves, structural changes in ganglionic centres having connections with the fifth and third nerves, of such a character as to produce paralysis of certain of the ocular muscles, usually, it would seem, upon the side corresponding with the location of the diseased tooth. In the other we have, in the same way, in consequence of persistent irritation of the ciliary nerves (in the primarily affected eye), structural changes brought about in ganglia connected with the fifth nerve, some of which, at least, are central, and these, in turn, probably through the medium of vaso-motor or "trophic" nerves, leading to the development in the opposite eye of the condition which we call inflammation. The disciples of Cohnheim tell us that this is impossible; that their experiments prove that inflammation cannot be produced in this way. But are they justified in believing that they have reproduced, experimentally, essentially the same conditions that exist in sympathetic ophthalmitis? For one, I am not disposed to admit it.

Reflections from the Surgery.

Aconite Poisoning from local application of Tincture of Aconite to the Gums.

(A case under the care of Mr. Frederick Bellamy, L.D.S.)

I LATELY had occasion to treat a case of incipient pulpitis arising in a molar tooth which I had recently stopped. I painted the gum over the affected part with Tinct. Aconiti, Tinct. Iodii aa ℥ ss, chloroform gtt. xx., and prescribed the same treatment to be repeated at night and twice the following day. I wrote out the above formula, and directed the patient to rub it over the gum with his finger. The liniment was accurately prepared by a medical practitioner, under whose immediate supervision the patient has continually been, and who avers that shortly after the second application of the liniment, he noticed unusual indications of cerebral anæmia, rigors, feeble and intermittent pulse, and in brief, the general symptoms of aconite poisoning, and which subsided only after receiving due treatment, and the lapse of two or three hours. I might mention that the patient was a delicate gentleman suffering from chronic nephritis. There is no question of any of the tincture having been swallowed, as the patient assured me there was no possibility of his having done so, and only a few drops were found wanting to complete the original quantity prescribed.

British Journal of Dental Science.

LONDON, AUGUST 15th, 1888.

SICKNESS, ANNUITY AND LIFE ASSURANCE.

We publish in another portion of our present issue a lengthy report of the Medical (and Dental) Sickness, Annuity, and Life Assurance Friendly Society, and commend its careful perusal to our readers. We have from time to time felt it our duty to enforce the wisdom and propriety of every professional man ensuring himself against the baneful effects of illness and premature death. How many of our readers are there who could not relate from the experience of their own individual circle, cases of men, who having disregarded provision for the future, who living in a fool's paradise of present health and vigour, have believed the halcyon days of harvesting would continue to the end, but when stricken by illness, or snatched away by untimely death, have left a wife and family to lament the loss of the bread winner, to struggle against the ruthless Nemesis of abject poverty, the happy home changed to a hopeless castle of despair, the bright dawn of oncoming success given place to beetling storm clouds. It is not the nature of many men to anticipate trouble while patients come and the ledger balances on the right side ; all things appear as they should be, and a likelihood of future illness seems too remotely improbable to need serious thought.

How far experience demonstrates the wisdom of this improvident outlook, it may be worth while to enquire ; the Report before us furnishes certain statistics which show that medical men are by no means so free from liability to disease and accident as their proverbial improvidence would seem to imply. A very large proportion of the insurers have, during the four years the Society has been working, had occasion to report themselves upon the sick list. We are not furnished with statistics dealing specially with the Dental section of the profession, and so we are not able to enforce by the logic of figures, the assertion which we fearlessly make, that dentists are as liable, and probably more so, to sickness and accident, than are the general run of medical practitioners. The very necessities of our daily avocation determine conditions inimical to health. Close and prolonged confinement within doors, constrained postures, the inhaling of the exhalations from diseased lungs or stomachs of our patients are all peculiarly conducive to ill-health among our profession.

The relaxation which many of us seek, too frequently forms another source of possible danger. For a dentist to be successful, he must give up practically all the hours of sunlight to his arduous calling, and how many are there who finish the day by an equally close application to their correspondence and book-keeping. So toilsome a life cannot, save for the very few, be a life of health, nor can it hold out hopes of being prolonged, unless the tension be lowered, and the strain relaxed. As we stated above, we are not aware that special statistics have been made concerning the expectancy of disease and premature death amongst dental practitioners, and this deplorable fact may, we believe, be explained in part, by a widespread ignorance amongst dentists, concerning the privileges which are open to them in the policies granted by the above mentioned Society.

All qualified dentists share with medical practitioners the advantages and emoluments of this scheme. Now while medical practitioners are each year availing themselves in greater numbers of the opportunity to ensure against sickness, but few dentists have, up to the present time, followed so laudable a lead. By the payment during health of certain annual premiums, a bread winner can protect himself against the possible contingencies of accident or disease, or he can assure a sum of money to be paid to his widow in the event of his death. The well-merited success which the Report tells us, has crowned the efforts of the Board of Direction, has led to the development of a second Society, which also assures its members of a certain sum of money during disablement from sickness or accident. This association to which we cannot give more than a passing reference, extends its benefits to all sorts and conditions of men, but possesses a large contingent of medical practitioners among its supporters. The basis upon which these Societies work is so sound, and the benefits they offer so real, that we cannot but urge again and again that all of our readers should avail themselves of the kindly offices of one or the other.

AMALGAM FINISHER.—Mr. Thomas Fletcher, of Warrington, writing upon the finishing of amalgams, mentioned on page 717 of our last issue, says :—" The process of finishing any plastic filling by a tape, or by any method which does not combine pressure with a system of working from the centre to the margin, is certain to cause a leaky filling, unless the material has reached its permanent and hardest stage before the treatment is applied. Any backward and forward motion, such as is necessary in polishing with a tape, is absolutely inadmissable on any freshly inserted plastic filling, and such treatment ensures certain failure. The writer of the note could not have tested the condition of any plug after being submitted to the treatment he recommends."

EFFECT OF PEROXIDE OF HYDROGEN UPON THE TEETH.—Dr. W. H. Rollins says :—" This preparation is in such extensive use in dentistry that a word of caution may be of value. I purchased a solution from a reliable apothecary in order to have a fair sample and into an ounce of it I put a tooth, which after a few hours (four) began to show marked signs of being acted on. The enamel had lost its lustre entirely. In two days the whole tooth became so elastic that it would bend in the fingers, and I could and have used this method of preparing teeth to be cut in a section machine.

AN AMERICAN DENTIST SIGHS FOR HIS FATHERLAND.—Dr. Field, now practising in London writes to the Editor of the "Archives of Dentistry," saying, "I sometimes suspect those who have enjoyed these old associations continuously for years, can hardly realize the deprivation one experiences who has made himself a voluntary exile in these old countries of Europe. I regret that I ever left the best country and the best people in the world." We believe the doctor left the "best country and the best people of the world, and having started a practice whilst in voluntary exile returned to Fatherland. However, in spite of his exuberant affection for his native shores, he again tore himself from "these old associations," to visit England, and renew his professional acquaintance with London.

A VERY NEAT AND EFFECTIVE BLOW PIPE can according to Dr. R. W. Chase, be made by attaching a piece of rubber tubing to the gasometer or cylinder of gas, using an ordinary mouth blow pipe attached thereto, the pressure of gas against the flame of an alcohol lamp makes a nice flame for soldering gold crowns, bands, etc. By this method dentists who do not have illuminating gas to use for such work, will find the above all that is desired.

CHEAP METHOD OF PLATINIZING METALS.—In this new process the metallic object is covered with a mixture of borate of lead, oxide of copper, and spirits of turpentine, and submitted to a temperature of from 250° to 330°. This deposit, upon melting, spreads in a uniform layer over the object. Then a second coat is laid on, consisting of borate of lead, oxide of copper and oil of lavender. Next, by means of a brush, the object is covered with a solution of chloride of platinum, which is finally evaporated at a temperature of not more than 020°.

The platinum adheres firmly to the surface, and exhibits a brilliant aspect. If the deposit be made upon the first coat, the platinum will have a dead appearance. Platinizing in this way costs, it is said, about one-tenth the price of nickel plating.

Abstracts of British & Foreign Journals.

DENTAL ADVERTISER.

ROOT MEDICATION.

By S. Eschelman, M.D., D.D.S., L.D.S., Buffalo, N.Y.

The writer believes that, there is only one point of egress to the periodontal membrane for septic matter, is not true. 1st—if such were the case, the mere hermetical closing of the apical foramen would be sufficient to protect the vascular structures surrounding the root ; 2nd—clinical experience teaches us that such treatment soon receives a vigorous protest from the periodontal membrane. Microscopic anatomy of the tooth shows another way of access to the periodontal membrane. We find dentinal tubuli terminate three ways : 1st.—in loops ; 2nd—with the spaces of the granular layer ; 3rd—with the canalicula of the cementum. Hence a direct continuation of living matter from the pulp to the periodontal membrane, through the dentinal fibres connecting with the cells which occupy the lacunæ and canaliculi of the cementum. Stowell believes that the dentine and cementum have a regular lymph canalicular system ; corresponding in a general way, with the lymph canalicular system of the whole body. Neither the dentinal fibres in the dentinal tubula nor the cells in the lacunæ and canaliculi of the cementum, nor the protoplasmic masses in the interglobular spaces, quite fill the space allotted to them, but leave room for the flow of lymph about them. By admitting that lymph spaces exist in the dentine and cementum, we can easily understand how septic matter,—due to putrefaction,—can enter ; also why such agents as arsenic will destroy the pulp, when applied to the tooth with a thick layer of intervening dentine. The therapeutic value of medicaments resides in meeting the three pathological conditions found in a putrescent pulp chamber ; 1st—their power of destroying the products of putrefaction, 2nd—their power of destroying the agents of putrefaction, fungi ; 3rd—their power of coagulaing or incorporating themselves with the dead remains of the dentinal fibres. Regarding the products of putrefaction ; sulphuretted hydrogen gas is the only one with which we will have to deal. The true deodorants are those containing chlorine, iodine, bromine, and oxygen, and some of the metallic salts ; all of which decompose the sulphuretted hydrogen, forming solid or liquid compounds with it. Deodorants containing metals or bromine are not applicable as disinfectants of the pulp chamber. Only those containing chlorine, iodine and oxygen are useful. Iodoform and iodine are really the same. Nascent iodine decomposes sulphuretted hydrogen by uniting with the hydrogen forming hydriodic acid, the sulphur being precipitated. Bichloride of mercury will decompose sulphuretted hydrogen, forming the black sulphide of mercury and hydrochloric acid. Peroxide of hydrogen is the best and most elegant disinfectant. It is a very unstable compound, readily yielding its extra atom of oxygen, which proves destructive to sulphuretted hydrogen gas by its union with the sulphur, forming dioxide, and the elimination of free hydrogen gas. Carbolic acid, creosote, eucalyptus oil and the essential oils have no effects as true deodorants, but accomplish the object, if an opening is left for the escape of sulphuretted hydrogen gas, by virtue of their therapeutic value as medicaments, thus remedying the second pathological condition mentioned, namely, the presence of the agents of putrefaction, fungi. All of the deodorants mentioned, with the exception of peroxide of hydrogen, are antiseptics which stand at the head of their class. After complete disinfection and sterilization of the pulp chamber remain medicaments which meet the third pathological condition, viz. coagulators which incorporate themselves with the dead albuminoid matter. Some have objected to the use of remedies that coagulate albumen, on the supposition that the pulp end of the tubuli becomes closed and does not allow the medicament to penetrate to the terminal ends of the tubuli. This is not so, as can easily be demonstrated by colouring carbolic acid with carmine and keeping the pulp chamber of a tooth filled with the acid for a few days ; when it can readily be seen that it has permeated the tubuli to their terminal ends. If we were to reject the medicaments which coagulate albumen we would be obliged to reject nearly all of our best antiseptics ; as bichloride of mercury, nitrate of silver, carbolic acid, and chloride of zinc, all coagulate albumen. Iodine and iodoform will not coagulate albumen, but will incorporate themselves with it. Iodoform, while it is one of our best remedial agents in the conditions mentioned, possesses another valuable property in common with carbolic acid that the other medicaments mentioned do not possess: namely, anæsthetic properties, which give it precedence in the conditions mentioned when complicated with vascular disturbance of the periodontal membrane.

Literary Notices and Selections.

DENTAL CARIES AND EVOLUTION.

By A. W. Martin, L.R.C.P., L.R.C.S. Ed.,
Medical Officer of Health, Gorton.

The many theories advanced to account for the rapid decay of the teeth in the present generation seem to imply that the special cause has not been definitely ascertained. The most generally accepted theory is that chemical products developed in the mouth, and microbes, are the principal agents in bringing about the disease. In the *Provincial Medical Journal* of November, 1887, in an abstract on "Care of the Teeth," the following paragraphs occur :—"If the necessary care were taken from the time of birth, without discontinuing it during infancy and during adolescence, adults would have sound teeth ; unfortunately parents do not attach much importance to primary dentition, and carious teeth are disregarded." "Miller believes that the first stage of dental caries is caused by the decalcification of the tissue of the tooth, the chemical result of acids produced by fermentation in the mouth, but the second stage is produced by micro-organisms." "Miller has recognised five kinds of microbes, but there is one specially responsible for the caries, and he has tested this on sound teeth." In Quain's *Dictionary of Medicine* the following occurs in the article on teeth :—"Caries of the teeth is by a great deal the most common pathological change to which the human body is liable. It generally affects some of the temporary teeth before they are shed, and there are very few adults indeed in whose teeth caries, in some degree, is not to be found. Dental caries is a softening and disintegration of the tooth's surface, gradually penetrating towards its centre. It is essentially a superficial affection, dependent on external influences. These are chiefly chemical, though partly mechanical, and it is not improbable that the action of a vegetable parasite (*leptothrix buccalis*) has some share in the process. One of the most remarkable circumstances in this pathological change is that though the dentine of the tooth undergoes, through disease, a radical change in physical characters and chemical composition, it long retains its vitality and even becomes increasedly sensitive. The idea that death of the tissue antecedes caries is quite erroneous. The most obvious commencement of caries takes place on the surface of the dentine immediately underlying faulty enamel, but in some instances it commences in the enamel itself." "The real causes of dental caries are as yet involved in much obscurity."

In Druitt's *Surgeon's Vade Mecum* (12th edition) we read under "Caries of the Teeth" :—"This begins especially in the furrows in the crown of molars, and where teeth press closely on each other. In both places the enamel is not unfrequently either absent, thin, or imperfectly calcified. Not uncommonly fissures are found elsewhere in enamel. The first sign of decay is opacity of the enamel at one of these spots, then it becomes brownish, friable, and disappears, exposing the dentine, which becomes still more widely brown, and more or less rapidly decalcified. On the surface of the pulp cavity, new dentine may be laid down over the carious focus. Sooner or later ulceration gains the mastery, and the pulp is exposed. The whole tooth may thus be destroyed. At a carious point the dentine tubules are varicose and filled with micrococci, as one would expect in the mouth. The etiology is complex. Developmental defect is evidently very important, from the frequency with which bad teeth are found running in otherwise healthy families. The effect of rickets on the milk teeth, and of congenital syphilis on both sets, is very marked, as also that of general ill-health during the development of teeth. Next, caries begins commonly during pregnancy, nursing, or after serious illness, though how these act is uncertain. The effect of softening acids, even used as drugs upon enamel, the common association of dyspepsia with bad teeth, the frequency with which caries starts between teeth, or where teeth areoverlapped by gum, and where, consequently, food is often retained for long periods, and the fact that dead teeth used as artificial ones may undergo caries, strongly suggest the view that acids developed in the mouth cause softening of the enamel, and naturally they act chiefly where it is thinnest, or, still better, upon exposed dentine. Once cocci gain access to the tubules of the latter, the products of their action doubtless assist largely in causing decalcification."

In an article contributed to another medical journal a few weeks since, blame was laid on the excessive drinking of tea of the present time, as producing not only dyspepsia but also as the direct cause of the decay of teeth.

Many other supposed causes might be named, held more or less by the public, such as the use of vinegar with food, the large amount of sugar consumed both by children and adults in different forms, drinking hot fluids, drinking cold fluids, the deficiency of lime salts in drinking-water in certain localities, the disuse of brown bread, and the general substitution of white bread in which the bran is left out, "the bone-making constituent of the flour." Also, vaccination has not been left out, as it has been observed that caries is very much more frequent in those countries where vaccination is more or less compulsory.

The following is an article contributed to the *National Encyclopædia* :—"A curious and very rapid alteration of the shape of the human jaw is now taking place in England. In the memory of the present generation of dentists, the normal shape of the jaw was changed from a curve approaching a semicircle to one of the character of a Gothic arch, the hardness of the teeth at the same time being marked by degeneration. Large investigation show these to be the typical modes of development of the "educated jaw," and indeed the contrast with the wide row of hard grinning ivories presented by the merry negro, with the almost rabbit-like prominence of the two incisors, and the weak and badly nourished teeth in the mouths of children of cultured ancestry, is so marked as inevitably to strike the attention of the most careless observer." "Caries of the teeth is a very common affection from which indeed few persons altogether escape—the causes of this complaint are rather obscure."

The points which strike one most forcibly are, the alteration in the shape and size of the jaw taking place in civilised countries, more particularly during the last half century, and a degeneration in the structure of the teeth, rendering them less able to withstand the action of certain external substances, such as fermentation products, acids, etc., the caries once started being probably increased by the action of microbes. From the fact of such changes in teeth being confined to inhabitants of civilised countries, it is evident that the cause must be traced to something operating in these countries, but which is absent more or less amongst savages, dental caries being unknown, or almost so, amongst them.

In seeking for such a difference, it is necessary to bear in mind the function of the teeth and their importance in the animal economy. "Their most important function is mastication, by which food is comminuted and at the same time insalivated, two essential preliminaries to digestion. The loss of teeth is with many of the lower animals the limit of life, from the cessation of these processes." It scarcely requires mentioning that the teeth of all animals, young and old, man included, are subject to the diseases common to similar structures in the body, and amongst the diseases to which bones are liable is atrophy in its various forms.

"Wasting of any part of the body during life, when not physiological, usually depends either upon some interference with the blood supply or some disturbance of innervation, but to these must be added, in the case of organs which have an active and continuous function, disuse or over-stimulation. Disuse produces atrophy only in organs whose functions are active and constant, such as nerves and muscles." "A cessation of function from whatever cause is manifestly and invariably followed by wasting of the organ in which the function had its seat; from the complete and long continued cessation of action the substance of organs is sometimes almost entirely removed, nothing remaining by which the original structure can be distinguished."

A complete cessation of function leads to effects manifested in the lifetime of an individual, whereas diminished functional activity takes a much longer time and spreads over several generations before the effects are sufficient to produce any great structural change. At first sight it may appear strange to associate dental caries with atrophy of bone, but on examining more closely into the function of the teeth, it is evident that their work is solely the crushing and mastication of hard substances forming part of the food of animals, and if that work is accomplished either wholly or partly by any other means, then there is a cessation, more or less, of their particular function, for food in a more or less soft condition certainly does not necessitate the use of such hard instruments as the teeth are in their natural condition for its mastication and insalivation. The conclusion seems forced upon us that the cause of dental caries is atrophy of the bone structure, simple and degenerative, brought about by diminished functional activity through the habit of cooking and softening the food in civilised countries, the atrophy of the teeth differing from atrophy of other bones of the body only so far as they differ from them in composition, structure, situation, and function. Atrophy and degeneration of bone from disuse or diminished use in any other part of the body does not lead to caries in the same way, in consequence of being protected from external irritating influences, through being enclosed in muscle, skin, etc. We have an example in the digits of the four outer toes undergoing atrophy from pressure and disuse, yet giving us no trouble like the teeth. "The last two phalanges of the little toe are generally anchylosed in adults, in consequence of being cramped by tight shoes, so different from that free spreading of the toes which nature intended." The teeth, however, are not so protected, and as soon as degeneration of their structure has advanced ever so little, they become less able to withstand external influences, chemical and mechanical, met with in the mouth. "The idea that death of the tissue antecedes caries is quite erroneous, the most obvious commencement of caries takes place on the surface immediately underlying faulty enamel, but in some instances it commences in the enamel itself."

It is now difficult to see why the disease should be almost wholly confined to civilised countries, cookery being in a very rudimentary state in uncivilised countries compared to Western Europe. It is in the memory of the present generation of dentists, however, that "the curious and very rapid alteration in the shape of the jaw commenced to take place, the shape of the jaw changing from a curve approaching a semicircle to one of the character of a gothic arch, the hardness of the teeth at the same time being marked by degeneration." The jaw as well as the teeth is thus seen to be undergoing the same process of simple atrophy, or degenerative atrophy as the case may be, but we are scarcely cognisant of the fact, not suffering in the same way as from the teeth, through the jaw bones being protected from external influences, chemical or mechanical, in the mouth. It is brought to notice in those cases where the teeth are crowded together, there being insufficient room in the jaw for them to develop fully, the jaw in such cases having diminished in size at a greater ratio than what has taken place in the teeth. In saying that the jaw or teeth have diminished in size, it is not meant that the change is confined to the individual, but to the race, the tendency being transmitted from parent to child. Up to the early part of this century the food of the working classes was very much coarser than at present, the bread particularly being coarse and hard, through the high price of corn, the wheat flour generally being mixed with rye and barley flour, causing the bread to be very much harder, and giving to the teeth their full and proper work to perform. The repeal of the Corn Laws, in giving a free, constant, and cheap supply of wheat to the country, has thus, strangely, been one of the chief factors in increasing dental caries and its consequences. The perfection to which flour is brought by machinery, and the light spongy bread, "the staff of life," of to-day, is a great contrast to that of half a century ago, and still more so to that of a hundred or a hundred and fifty years beyond, when the quern or grinding-mill was a household requisite. If the caries were due to a deficiency of some of the constituents in our food necessary for bone structure, the effects would not have been confined to the teeth, but would have been manifested in other bones of the body, as is frequently seen in certain diseases, and from malnutrition.

Several notices have appeared during the last year or two of dental caries in the horse, the same treatment being adopted for its arrest as in the human subject; or, when gone too far, the tooth being extracted and an artificial one substituted. The method of crushing, chopping, cutting, and softening the food of the horse, will undoubtedly lead in time to a condition of dental caries in that animal similar to what we are now suffering from, and brought about by the same cause. Examples are not wanting in natural history of animals having entirely lost all or some of their teeth, due to altered habits, the result of either their surroundings being changed, and thus necessitating a changed mode of life, or having preferred some particular habit of life to the one their ancestors had been accustomed to lead. "With the complete and long continued cessation of action, the substance of organs is sometimes almost entirely removed, nothing remaining by which its original structure can be distinguished." Several examples are met with amongst the *Cetacea* and *Sirenia*. "The *balænidæ* or toothless whales are characterised by the total absence of teeth in the adult. Teeth are however present in the fœtal whale, but they never cut the gum. The place of teeth is supplied by a number of plates of whalebone or 'baleen' attached to the palate, hence the name of 'whalebone whales' often given to this family. . . . The whale is a strictly carnivorous or zoophagous animal, but owing to the absence of teeth, and the comparatively small calibre of the œsophagus, it lives upon very diminutive animals. The whale in fact lives mostly upon the shoals of small pteropodous molluscs, crustacea, ctenophora, and medusæ, which swarm in the arctic seas. . . . The *manatees* are characterised by the possèssion of numerous broad molars, which are never all in use at one time, while there are two small upper incisors which do not cut the gum. . . . In the *Rhytina Stelleri*, which is now extinct, having been exterminated by man within a comparatively recent period, there can hardly be said to have been any true teeth, but the jaws contained large lamelliform fibrous structures which officiated as teeth, and may be looked upon as molars. These singular structures are not teeth in the true sense of this term, but they are similar to the horny tuberculated plates found in the front of the mouth of the dugong and manatee, and the upper ones may be regarded as the equivalent of the anterior palatine pad of the ruminants. . . . As regards the distribution in time of the *Sirenia*, the oldest known remains referable to the order are found in the Eocene tertiary (*Eotherium*). Of the same age is probably the interesting form described from the tertiary deposits of Jamaica, by Owen, under the name of *prorastomus sirenoides*. This type is remarkable as possessing upper and lower canines, in addition to molar and incisor teeth. The miocene and pliocene deposits of Europe have yielded remains of numerous sirenians, belonging to the genus *Halithrium*, in which there are tusk-like upper incisors combined with enamelled molars."

The ruminants also afford examples in having lost their upper incisors and canines, their place being taken by a hard callous pad, against which the lower incisors impinge. The stomach of the cetacean as well as the ruminant is complex. "In birds the function of mastication is performed by the stomach, the gizzard receiving the stored and soaked contents of the crop, and grinding them between its powerful muscular walls with their dense horny epithelium, aided too by small stony particles which the bird takes care to swallow from time to time." If the teeth then are eased of their work, mastication has to be accomplished more or less by other means—in man by the art of cookery, in animals by a more elaborate construction of the stomach.

It has been mentioned above that the bones of the outer toes are undergoing atrophy, from pressure and disuse. From that fact we have recently been told that they will ultimately disappear, the foot becoming somewhat longer, and presenting much the same appearance as if the toes were amputated and the parts healed. But the toes retain their position on the feet, not so much because of their usefulness or necessity, but by being homologous with the fingers, and structures thus correlated frequently persist long after there is the slightest use for them—such as the nails on the toes correlated with those on the fingers, and the hair in the axilla with that in the groin.

The nose too is to disappear from the human face in the future it is stated, the sensation of smell becoming less a necessity to us with civilisation. If the function of the nose were primarily that of smell, there might indeed be great danger of such a removal gradually taking place; but its use is more in connection with the respiratory organs, to warm the inspired air, the neglect of which is doubtless the cause of death of thousands yearly, judging by the high number which diseases of the respiratory organs bear to the other causes of death. The olfactory nerves would naturally develop in the passages of the proper air-current, whether that had been the mouth or the nose.

The causes of lingering labour scarcely come within the scope of this article for discussion; yet the chief factor in it malformations excluded, is another instance of atrophy from pressure and disuse, the wearing of stays or corsets from girlhood upwards having a most harmful effect upon the abdominal muscles, and causing them to decrease in size and become weaker. All medical practitioners and mothers know the importance of the action of these muscles in aiding the uterus to expel its contents in the bearing-down pains. So atrophied and weak are they becoming with each successive generation of women, as to be of little help in such times, and recourse to instrumental delivery is becoming more common year by year. Its effects are observed more in towns than country districts, and in uncivilised lands we are told parturition has but few of the terrors and pains we are accustomed to observe here.

To return to the subject of the teeth, judging by analogies in the lower animals, they will in time be supplanted by a hardened condition of the gums, or by hard callous pads, to assist in the mastication of soft food and its insalivation. The power of "adaptation to environment" still seems as active in the present time as it has been in the past in "The Descent of Man."—*Medical Provincial Journal.*

Dental News.

MEDICAL, (INCLUDING DENTAL,) SICKNESS, ANNUITY, AND LIFE ASSURANCE FRIENDLY SOCIETY.

Fifth Report of the Committee to the Members, for the year ending June 30th, 1888.

Gentlemen,—In presenting to you our fifth report we are fortunately able to continue the pleasantly monotonous record of prosperous progress and good work. Four years and a half after the Society commenced its career it is encouraging for us to be in a position to state that, from whatever point of view it may be regarded, the work of the year just closed will compare very favourably with that of any of those preceding it. Such a fact is the best promise for the future of our Society, and at the same time affords ample justification of the anticipations and calculations which led to its formation.

Now that a sufficient time has elapsed to enable a definite judgment to be formed, it may be useful and interesting to recapitulate the problems that were left to be decided by the future when the Society was started, and also to examine by the light of our experience the answers that facts have given to them.

Naturally the first and most important question was whether there was any considerable demand for the formation of such a Society, and if a sufficient number of members of the medical profession would join to ensure its stability and permanence. After careful consideration and consultation, the minimum number of members for this purpose was fixed by expert opinion at 400. This number was speedily obtained, nearly 500 proposals being received the first six months. Since that time the numbers have steadily increased, the additions growing more numerous in each succeeding year, the total proposals being 1,039. Of course the actual number of members is considerably below this, the total having naturally been reduced from several causes, although the proportion of those who relinguish their membership after having once fully taken it up is, fortunately, very small. There remains, however, an effective membership of more than double the number stipulated for; and, while this is conclusive evidence of the need for such a Society, it is a source of strength and security, since calculations based on average experience are more likely to work out correctly in a large than small membership.

Another question of the highest importance was the financial basis on which the Society should be founded. Although great care was exercised in this matter, and the best available authorities and sources of information consulted, it was recognised as impossible to determine the point with any certainty by any other means than the light of actual experience. This experience has now been obtained in sufficient volume to be regarded as trustworthy, and proves beyond the possibility of doubt that the financial lines on which the Society was founded are such as to render it absolutely secure. The Society has now to its credit a capital of nearly £25,000, created entirely by the premiums of members; and although how much of this is profit and how much necessary reserves can only be determined by the actuarial process of valuation, the members can await the application of this test with complete confidence. On the other hand the disbursements made by the Society have been sufficient to demonstrate its widespread usefulness, a total of £5,600 10s. 8d. for sickness pay and £1,150 for death having been paid since the commencement.

If a closer examination be made of the operations represented by these disbursements, especially in the matter of sickness pay -unquestionably the most important part of the Society at present—some very interesting facts are elicited. Thus the amount paid for sickness has been participated in by 275 members out of a mean average membership during the period of about 700, from which it would appear that one out of every three members is liable to experience some disabling sickness in the course of four years. This is a proportion for which those who have not examined the matter will scarcely be prepared, and it affords ample evidence of the widespread risk of sickness. Of course there has been great divergence in the nature and duration of the claims, many of which have been for the minimum of one week, while one claim has extended over three years, and another over two. The latter facts certainly prove the need for our present system of continuous payment at reduced rates in cases of permanent disablement, as the Society in such cases provides what may in effect be an allowance for life, which must be of great value to the member, and yet causes no appreciable strain. Another interesting experience has been the comparatively large number of disablements from accidents ; this would appear to be a risk to which members of the medical profession, especially those practising in country districts, have more than ordinary liability. Several of the accidents, against which, of course, the medical examination at joining provides no protection, have occurred almost at the commencement of the membership ; in one instance (a trap accident, causing compound fracture of the ankle), the consequence was that the member received six months' sickness-pay (£109 4s.) during the first year's membership. This and similar cases afford undoubted proof of the need for the Society, and of the real and ever-present possibility of it being useful to even the most healthy and vigorous of its members. Briefly summarised, the deduction to be drawn is that, while the sickness-rate experienced is apparently below that anticipated in the tables, and is therefore amply provided for, the average risk is a very tangible one, and this department of the Society's work promises to be constantly active and useful, while the nature of the business will always demand careful attention and supervision.

Another point raised at the commencement, was the possibility of managing the Society in a manner that should be at once efficient and economical. From the outset it was plain there would be no lack of voluntary and honorary service placed at the disposal of the members, owing to the ready recognition of the usual and necessary character of the undertaking ; but it was a question for consideration how far such service would be able to cope with a business involving a great deal of minute detail, the equitable adjustmemt of matters sometimes of a delicate and difficult nature, and the safe and profitable investment and control of a large and continually growing capital. Indeed,one Society started to transact a similar business, open to the general public, after applying for and receiving information derived from our experience, pointedly stated in its prospectus that such duties could only be efficiently discharged by insurance experts. Although this is a point on which we must naturally touch with reticence, we think it may be fairly claimed on behalf of the Society that the results have furnished a complete reply to this and similar statements. For more than four years detail work of a heavy and responsible nature has been carefully and smoothly dealt with. During the period more than a 1,000 proposals have been examined and decided upon ; a large and varied correspondence has been promptly dealt with; over 11,000 notices have been issued to the members ; 1,500 separate certificates of sickness have been compared and verified, and nearly 1,600 cheques examined and countersigned—the whole of the work having successfully passed the ordeal of a searching audit. During the same term a large number of committee meetings have been held at regular intervals, and 301 resolutions adopted and recorded. Constant attention has also been given to the all-important matter of finance, and the measure of success in this direction is the fact that, in the face of the admitted difficulties at the present time in securing absolutely safe remunerative investments, the capital of the society is invested at an average rate of £3 17s. 6d. per cent. in stocks of the highest class, while the judgment with which the invetments have been chosen is justified by the fact that over £4,598 worth of stock has recently been sold for purposes of re-investment at an average profit over the purchase price of 9 per cent.

If the cost of working the Society be examined, it will be found to be pleasantly small, and far below the anticipation. The amount set aside at the outset for purposes of management was fixed at a maximum charge of 10 per cent. on the premium income—which was at the time considered an extremely low rate. So far, however, not half this sum has been required, the working expenses having been met by a proportion of less than 4 per cent. of the members' payments, exclusive of interest. Nor have any special or unusual means been taken in apportioning charges to bring this about; on the contrary, several items have been charged to the management fund which might have been debited to the assurance funds with at least equal reason, if it had been desired to do so. This economy, important and satisfactory in itself, becomes doubly so when the strictly mutual character of the Society is considered, under which the whole of the profits and reserves are available solely for the benefit of the members. In other words, the whole of the contributions, with the exception of less than tenpence in the pound, and all accruing interest are devoted to the assurance objects of the Society, and must be applied solely for the advantage of those by whom they have been paid. The cost of administration may safely be said to be lower than that of any Society whose work is comparable with ours, and this is the more striking when it is remembered that it covers the expense of a quarterly receipt of premiums, and of constant weekly disbursements. It must, however, in justice be pointed out that this result has been largely brought about by a quite unusual amount of intelligent and active honorary work given to the Society, and that it has enjoyed the advantage of services rendered to it by many members of the profession and by the medical press without fee or payment.

Thus a comprehensive review and retrospect of the Society's work—which we considered this a fitting opportunity to make—demonstrates the most ample grounds for satisfaction with the past and confidence in the future. We are, however, under a legislative obligation to submit the affairs of the Society to acturial examination and valuation at least once in every five years—a course as to the wisdom and prudence of which there is no room for doubt. It has been determined to have this done up to December 31st next, when the whole of the facts will be furnished to our very eminent and able consulting actuary—Mr. F. P. Nelson, F.R.I.A. We hope to be able to place in your hands an abstract of his report before the general meeting in August, 1889, and you will then obtain the result of the application of scientific tests to the work of the Society, in addition to the general facts and conclusions which is now our privilege to place before you. In the meantime we invite your attention to the following analysis of the details of the transactions of the year just closed.

NUMERICAL POSITION.

At the commencement of the year under review there was an available membership of 774. During the period 139 proposals were received, as compared with 125 in the previous year and 97 in the year preceding that. The whole of these with the accompanying certificates of health, were carefully examined ; in many cases further inquiries made, and eventually we were enabled to accept all but six—a fact that proves the high average character of the lives presented. This leaves an available increase of 133—against which must be set 5 withdrawments on payment of surrender values, 4 members' deaths, and 17 lapses and exclusions for non-payment. If the total of these (26 be deducted from that of the 133 new members the net increase will be seen to be 107, as compared with 98 in the previous year, bringing the total existing membership up to 881.

It is necessary to explain that the surrender values alluded to were granted after full enquiry, which will also be necessary in all future similar applications. While we regard this rule as an equitable mode of terminating membership under exceptional circumstances, it is obviously one that must be administered with great care, and—especially in respect to the sickness fund—with full regard to present risks and future possibilites.

SICKNESS FUND.

In this fund there has been an income from premiums alone of £4,766 5s. 6d., as compared with £4,133 6s. in the preceding year. The interest received amounts to £308, 14s. 6d. as compared with £150 4s. 11d. and there is a new item of £199 11s. 3d. profit on sale of stock, which will be further explained in a subsequent part of this report. The receipts are thus £981 0s. 4d., in excess of those of the preceding year. On the other side sickness-pay has made an expenditure of £1,721 17s. against 1,619 5s. in the preceding period, an increased outlay of £102 12s. This is, of course more than accounted for by the increase of members and income ; and it must further be remembered that the tables on which the fund is based rest on the assumption that the sickness claims entail an augmented proportionate charge with each year's increase in age. If, however, this expenditure be treated as a charge on premium income alone, it will be seen the proportion expended this year is 36 per cent., and, as in the two immediately preceding years the charge amounted to 37.7 and 38.1 per cent. respectively, it will at once be seen the anticipated gradual rise in the sickness-pay rate has not, as yet, been realised.

Payment has been made during the year to no fewer than

125 members, as against 92 in the previous year, the period claimed for being an aggregate of 524 weeks 1 day, as compared with 497 weeks 5 days. Thus while the claimants have been more numerous the average duration of each claim has been less. The whole of these claims have been carefully scrutinised, medical certificates as to the condition of the sick members being received every week. While it is requisite the members should have the fullest advantage when sick from the insurances they have effected,, it is obviously necessary in the interests of all to see that claims are only recognised when the conditions set out in the rules are duly fulfilled, and it has been our very unpleasant duty to refuse payment in one or two cases where this has not been so. On the whole, however, the payments have been made with the minimum of friction ; and we have received a number of letters from members at the termination of their claims expressing satisfaction at the punctual and courteous manner in which this part of the Society's business is conducted.

Annuity Fund.

The premium income to this fund has been £2,304 6s. 2d. during the year under review, as against £2,311 11s. 7d. in the preceding period. This slight decrease is not, however, due to any falling off in the membership or the normal premium income of the annuity branch, which has in fact considerably increased in the year. During the previous year the system was introduced of an increased payment to secure a proportion of the annuity premiums being repaid to members' representatives in case of death before the age of 65. At the same time the right was given to members during a limited period to pay the amount of these extra premiums calculated from the date of joining, and thus to antedate the application of the new principle. A considerable number availed themselves of this, and their payments, as pointed out in the previous report, increased the annuity premiums last year in an abnormal manner, and they are for this reason of no value for purposes of comparison. If, however, the next preceding year, when the transactions were of the usual character, be taken, the premium income will be found to have been £1,895 15s. 9d., and if this be compared with the present amount (£2,304 6s. 2d.) a fair idea of the growth of the income of the fund will be obtained. There is at present no expenditure calling for comment from this fund, but on March 1st next a number of members will be entitled under the new rule, in case of death and occasional disbursements under this head may be anticipated. In the meantime steady growth and profitable accretion of the reserve capital are all that can be looked for, and these are certainly being very satisfactorily accomplished.

LIFE ASSURANCE FUND.

The amount received in this fund from members' payment is £81 15s. 10d. more than in the preceding year (£853 9s. 4d , as compared with £771 13s. 6d.) Interest has produced a further excess of £35 4s. 7d., while there is a new and extra item of £42 6s. 11d. profit on sale stock. The income to the fund is thus £159 7s. 4d. more than in the preceding period. On the other hand four claims have had to be met, involving an expenditure of £650, while none were paid during the previous year. This is hardly, however, a correct comparison—for, as was pointed out in our report for last year, two of these deaths had, at the date of its issue, already taken place, and payment was only pending the production of the necessary papers. Thus the facts really are—two deaths this year, causing an expenditure of £400 out of a total income of £964 4s. 1d., as compared with two deaths in the previous year, causing an expenditure of £250 out of a total income of £804 16s. 9d. Of course the number of claims on this fund differs from the total deaths recorded, as only a section of the members have insurances on their lives.

MANAGEMENT FUND.

The total income to this fund during the year under review has been £958 13s. 6d., as compared with £871 8s. 6d. during the preceding period—an increase of £87 5s. On the other side there is an increase of expenditure from £406 18s. 3d. to £410 1s. 3d. or £3 3s. This is due to ordinary causes, arising chiefly from the growth of the Society, and involves no item calling no special comment. The expenditure, instead of absorbing the 10 per cent deducted from premiums, has been under 4 per cent. for the year, and thus a considerable amount (£548 12s. 3d.) has been added to the already large accumulation in this fund. If the whole period since the commencement be taken it will be found the 10 per cent. deduction in question has produced £3,106 16s. of which amount the present balance of £1,996 15s. 6d. has been saved—so that the proportion of cost taken over the whole period has been under 4 per cent. Of course items may arise in the future which will make exceptional demands on this fund ; in fact the coming year will have to bear the cost of the valuation of the Society, which really is a charge over the whole five years. There is no reason, however, to anticipate any material alteration in the present satisfactory state of things ; and this is the more gratifying as the profit under this head accumulated on behalf of the members does not need actuarial verification.

FINANCIAL POSITION.

Taking the various funds as a whole, the following is a statement of their accumulated reserves at the close of the term under review, and of the preceing year .—

	June 30th, 1887.			June 30th, 1888.		
Sickness Fund	£7,794	15	10	£11,340	10	1
Annuity	6.628	11	2	9,285	3	4
Assurance	1,773	12	9	2,072	8	10
Management Fund ..	1,448	3	3	1,996	15	6
Total	£17,645	3	0	£24,694	17	9
Increase of reserves on the year ..				£7,049	14	9

During the year, special attention has been given to the question of investments, and as far as possible, selection has been made of the securities of local bodies, as to which there could be noroom for doubt, and which presented the further advantage of being taken at par, and with a minimum of cost. The conversion of our Government funds, (in which fortunately we had no investments), had a marked effect on the value of the higher class of securities, and we found some on those which were held by the Society, and quoted on the Stock Exchange, had considerably increased in value. Concurrently with this coming to our notice, the opportunity arose for the loan of £7,000 to the Aston (Birmingham) School Board, repayable over a term of fifty years, 3¾ per cent. interest. We therefore determined to sell some Corporation and Railway Stocks, which were then returning the Society an average interest of £3 12s. per cent., in order to secure the profit arising from their increased value, and a further advantage by reinvestment at an enhanced rate of interest. This was successfully accomplished, stocks being sold to produce £5,009 0s. 9d., at a profit over the price paid by the Society for their purchase of £419 7s. 0d. This sum will be found divided *pro ratâ* to the various funds.

The following is a statement of particulars of the stocks sold, with the items of profit.

	Bought for	Sold for	Profit.
Greta Western Rent Charge	£491 15 3	£541 6 5	£49 11 2
Croydon Corporation Stock	1,506 15 11	1,646 4 10	139 8 11
Wolverhampton ,, ,,	1,400 0 0	1,520 19 4	120 19 4
Cardift ,, ,,	1,200 0 0	1,300 10 2	100 10 2
Total	£4,598 11 2	£5,009 0 9	£410 9 7

Although the sale was concluded and the profit realised before the close of the year under review (June 30th) time did not admit of the loan to the Aston School Board, already alluded to, being completed by the same date, and this will account for the unusually large sum (7,761 11s. 5d.) standing to the Society's credit at our bankers—The Union Bank of London. Since the close of the financial year, the investment in question has been completed, and on July 10th, £7,000 was advanced to the School Board in question, reducing the balance at our bankers to the minimum amount possible for the efficient working of the Society. The total amount invested in the names of the Trustees, and bearing interest, became on the completion of this transaction, £23,938 9s. 4d.

The following statement shows the position of the Society on June 30th of each year since the financial commencement on March 1st, 1884. To facilitate comparison, the amount of increase for each year is shown :—

Date.	Amount of Reserves.	Increase on years.
June 30th, 1884	£1,434 16 3	—
,, ,, 1885	6,433 0 10	£4,998 4 7
,, ,, 1886	11,339 7 6	4,897 6 8
,, ,, 1887	17,645 3 0	6,314 15 6
,, ,, 1888	24,694 17 9	7,049 14 9

(Signed) by order of the Committee,

ERNEST HART, *Chairman*,

C. J. RADLEY, 26, Wynne Road, Brixton, S.W.
Secretary.

BRITISH DENTAL ASSOCIATION.

ANNUAL MEETING OF THE WESTERN BRANCH.

THE annual meeting of the Western Branch of the British Dental Association was held on July 27th, at the Athenæum, Plymouth. The proceedings were prefaced by a meeting of the Council in the Grand Hotel. At eleven the President delivered his address, and several papers were read and discussed. After an interval for luncheon the business of the meeting was resumed and several gentlemen gave demonstrations in the rooms of the president-elect, Mr. T. H. Balkwill, L.D.S., Princess Square. In the evening the annual dinner took place at the Grand Hotel, and an excursion is arranged to Endsleigh, passing Devon Great Consols on the road.

The President (Mr. E. Apperly, L.D.S., Eng.) was in the chair at the first portion of the morning meeting, and was supported by the president-elect, Mr. Balkwill. Others present were Messrs. F. H. Balkwill, Martin Magor, E. N. Washbourne, J. M. Ackland, J. C. Parson, Williams ; hon. sec., Henry B. Mason ; J. McKno Ackland, C. Spence Bate, W. F. Cornelius, E. L. Dudley, F. H. Briggs, Torquay ; Edward Little, Newport, Mon. ; John H. Gartrell, William J. Goodman, Yarde ; Henry Helyar, Ernest E. Jewers, Geo. C. McAdam, Henry W. Mayne, J. C. Oliver, T. Cooke Parson, Geo. B. Pearman, Joseph John Huxtable Sanders, Louis E. Sexton, Alfred Smith, Arthur Taylor, John Collins Tippett, John Henry Whittel, W. Caleb Williams, Francis Youngman. The minutes having been read by the Secretary, it was announced that letters and telegrams had been received from several gentlemen stating that they were not able to attend. The annual report of the Council was then considered.

Having thanked them for election, Mr. Balkwill, the newly elected President, said he proposed to say something on a pamphlet by Mr. Bullin, president of the Midland branch of the association. The address was calculated to do both harm and good. Its general tone would stir afresh class and professional jealousies between the dentists and the medical profession, and it would create misconceptions with regard to the only men who had carried any scheme for the better education and organisation of the dental profession to a successful issue. The pamphlet was calculated to do good in that it reminded them that it was only within their own borders that they must look for safe an beneficial guidance and government. As far as they could make sound knowledge and practice go hand in hand to the benefit of the community, so would their real value as a profession be recognised not only by the medical profession but by society at large. A calling did not entirely rank according to its necessity to the community, or a provision dealer might claim a foremost place; nor according to the risk its followers had to undergo, or a private soldier might rank before his officer; but in a great measure according to the inheritance which it enjoyed and employed the results of the labours of its ancestors. Among the learned professions this inheritance or capital was largely the knowledge of their particular field which formed the education of their students. Societies were selected by a definition in two parts—that which admitted and that which excluded; and the doorway should be kept and framed as well as poor mortals could as a door of truth, which should let in all who were worthy and exclude all who were unworthy, remembering that those who climbed over the wall some other way were not to be commended. The Dentists' Act of 1878, took a very comprehensive sweep, including in the register a great many as dentists who had but a colourable right to that title, rather than injure any vested rights. In the first register these were defined under four classes—first, those dentists who were *bona fide* in practice before the passing of the Act; secondly, those who had dental qualifications; third, those who practised it with medical qualifications; and fourth, those who practise it in connection with pharmacy. Of the latter class out of about 5,000 registered dentists there were more than 2,000. In the latest register, 1887, 5,207 were registered as dentists; of these 957 were registered as possessing dental or medical qualification, and 4,243 as being in practice before July 22, 1878, but strange to say, not one of these was registered or registerable in connection with pharmacy. As none of these could have been registered since 1878 without a dental qualification, this number necessarily included all the survivors of the over 2,000 who entered under this connection. He did not think this omission would have taken place if the register had been more under their own supervision, and he drew the attention of their pharmaceutical friends to the slight implication it laid upon them. Although they were now affiliated with the medical profession, it was doubtful if they originally sprang from them. He inclined to the opinion that they must look for their origin rather to the craft of goldsmiths, with some help from turners and bone carvers. But although the adaptation of artificial work might have initiated their speciality, as it was still their sheet anchor, and brought in its train the necessity of surgical and medical knowledge, the treatment of inflammation and neuralgia necessitated their applying to the accumulated culture of the medical profession for the necessary information, and the sympathy produced by the pursuit of similar knowledge had finally induced them to seek and obtain affiliation with that profession. But although they had much to gain by such a connection, the fact must not be lost sight of that they did not come empty-handed. If the medical profession kept people from dying, they helped to keep them alive by keeping their teeth in repair and supplying substitutes of which he thought they might fairly say no artificial substitute of a lost natural organ so efficiently fulfilled the natural function. In the histology of dental tissues they had done good and original work : on the treatment of the teeth, of course they stood the authority; while in anæsthetics they had also done much, if indeed modern anæsthesia might not have been said to have been originated by dentists, Horace Wills, an American dentist being the first who practically demonstrated it by extracting a tooth painlessly under N_2O. gas on September 30, 1846. Since then dentists had been continuously practised in and were familiar with anæsthetics, and were probably as expert in their administration as any other branch of the medical profession. In evidence of the good work which dentistry had done in the literature of anæsthesia, he related a case. A few years ago a medical man in the town desired his opinion on the case of a young lady who was suffering severely from odontalgia. He advised the extraction of three molars which were decayed to the level of the gums and had exposed pulps. He demurred to her having an anæsthetic as she suffered from epileptic fits. The idea of getting the teeth out without, seemed hardly practicable without using any severe measures which they were loth to do. He showed his friend the opinion given in Underwood's notes on anæsthetics that nitrous oxide was innocuous in such cases. It was administered, the both were taken out, and the lady never had another fit. Naturalists told them that in the process of life on the earth there seemed to be particular times when species were differentiated with great facility and energy, which change at last reached a place of greater rest wherein the species remained with slight change and a comparatively long time until the change of external conditions required a higher development to meet the strain of the friction of life. If this was true of human professions, he thought it would be particularly applicable to their profession at the present time. As far as they could judge there had been greater advances in practice and methods of work, more numerous experiments greater elaborations and exquisite finish in instruments and appliances, and more thorough and exhaustive inquiries into the elementary laws and facts which should govern their practice during the past fifty years than during many hundred years previously. Under such conditions they must expect to find a certain unstability about the fees received from their work. There was doubtless a general war going on between the professional man and the public, the first trying to better his position, the second anxious that he should better it too much. What was the best way in which to settle the matter? Uniform fees were manifestly unjust to both parties. On the whole they might say that at the present time the tendency was to lessen fees for artificial work and increase the fees for filling, which were yearly becoming more elaborate and exhausting to the operator. Their transatlantic brethren whom they always regarded with attention, often with admiration, and sometimes with astonishment, had lately exercised them with two "booms." The first, bridge work, was the fixing permanently in the mouth, by attachment to natural roots or teeth, bridges of metal carrying mineral crowns for mastication and appearance. Some of the cases described appeared to be masterpieces of mechanical ingenuity and dexterity. Whether they would eventually take rank as recognised successful practice must be left to time at present. The judgment of English practitioners was rather adverse, resting partly on their experience of the instability of old roots and anchored roots as a sound foundation, and partly on their experience of the artificial teeth with which they sometimes meet which have remained for a length of time unremoved from the mouth. The second boom was the operation by Dr. W. J. Younger, of San Francisco—the implantation of natural teeth which have been out of the mouth and dry for months in sockets artificially formed by drills and reamers in the maxillary tissues where the old alveoli of the teeth had been long obliterated. The operation was first performed in 1881, and there was no doubt that they had performed this audacious operation a great many times with unexpected success. In conclusion, he thanked them for their attention, and asked for their indulgent criticisms.

Various papers on Dentistry were read.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the July sittings of the Examiners, the following gentlemen passed the First Professional Examination for the Science in Dental Surgery:—Frederick John Bonnalie, Chester; Andrew Kinsman Brittan, Devonshire; Alexander Kay Finlayson, Leith; John Alexander White Kirkpatrick, Leith, Henry Reginald Fryer Brooks, Banbury; James Seymour Allen, Derbyshire; John Henry Cormack, Edinburgh; Frederick Leonard Lloyd Masters, Huddersfield,; Lawson Storrow Shennan, Houghton-le-Spring; John Henry Larbatestier, Southampton; Herbert Sydney Welham, London; and the following gentlemen passed the final Examination, and were admitted L.D.S. Edinburgh:—Henry Reginald Fryer Brooks, Oxfordshire; Henry Brooke Dew, Somersetshire; and David Alexander Cormack, Edinburgh.

Tempering Swiss Broaches.—Dr. Harper, writing in Archives of Dentistry says, divide the number of broaches into halves, then place together again; leaving half and half pointing in opposite directions; bind together with binding wire, drop melted beeswax over the bunch until the broaches are covered with the wax, then hold in a blaze until the wax ignites, remove from the blaze and allow the wax to burn off; let them cool gradually. By this process the broaches are nicely tempered without corroding their surfaces; they are flexible yet sufficiently stiff not to bend too easily.

Hospital Reports.

Monthly Statement of operations performed at The Dental Hospital of London, Leicester Square, from July 1st to July 31st, 1888:—

Number of Patients attended		
Extractions	Children under 14	540
	Adults	1197
	Under Nitrous Oxide	936
Gold Stoppings		357
Other Stoppings		1070
Advice and Scaling		169
Irregularities of the Teeth		190
Miscellaneous		454
Total		4913

George Seymour, *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, Leicester Square, from July 1st to July 31st, 1888:—

Number of patients attended		2046
Extractions	Children under 14	425
	Adults	541
	Under Nitrous Oxide	729
Gold Stoppings		136
Other Stoppings		711
Advice		472
Irregularities of the Teeth		143
Miscellaneous and Dressings		221
Total		3378

Frank Lankester, M.R.C.S., *House Surgeon.*

British Journal of Dental Science.

No. 495. LONDON, SEPT. 1, 1888. VOL. XXXI.

OCULAR LESIONS DUE TO MORBID CHANGES IN THE FIFTH PAIR, MORE ESPECIALLY DENTAL AFFECTIONS.

BY DR. GALEZOWSKI, of Paris.

AFTER drawing the attention of his pupils to the necessity, especially in cases of affections of the eye of noting every symptom, and of taking care not to jump to hasty conclusions in deciding between cause and effect, and after narrating several interesting cases in support of his views, Dr. Galezowski proceeded as follows :—

One of the most frequent causes of inflammation of the fifth nerve and of the visual phenomena, which result from it, is to be found in some affection of the dental apparatus of the upper jaw. The teeth, as you well know, receive nervous twigs from the fifth pair. If any form of irritation affects a tooth, it is immediately conveyed to the corresponding nerve, which at once transmits it to the central branch from which it springs, and from this, it is disseminated with more or less intensity to all the secondary branches. It is owing to this close relation, that the eye, to which so many branches converge so often feels the *contrecoup* of an affection of the teeth. You will hardly find any mention of these facts in your classical treatises, and yet not a day will pass but you will have opportunities of seeing the good effects on the eye, of careful therapeutic treatment of the teeth.

The influence of the teeth on the sight may be seen at all ages. It is not at all unusual to meet with small children in their first and second years, at the time of the first dentition, in whom the eye becomes lacrimose and small ulcers form on the cornea. You diagnose Keratitis, you order the proper treatment and at the end of three months you are disagreeably surprised to find that you are no more advanced than you were on the very first day, the eye is still in the same state. In children, of say eighteen months or two years of age if you find an affection of the cornea is rebellious to treatment, examine the teeth and you will find some complication in connection with them, that the teeth have some difficulty in cutting through and have given rise to some redness, swelling, and a painful condition of the gum. Make an incision into the gum, help the tooth to come out and a few days afterwards all the symptoms will have subsided and the cornea will be well.

These accidents are still more frequent between the ages of five and seven. As you know, it is at this period of life that the second dentition takes place, and that it lasts for several years longer ; during this period, children are liable to phenomena which we are not able to explain. In one case, it is a tremulous movement of the lids which prevents the eye being fixed without causing much fatigue, and without giving rise to a free flow of tears. In another, this spasmodic action of the lids is of more moment, it extends to all the muscles of the face, and causes such violent movements that they come to resemble an epileptic or choreic seizure, more especially if they also involve the arms and legs, the whole body in fact. The medical man will have great difficulty in coping with them unless he has recognized their true causation. Trousseau was the first to draw attention to these facts in describing choreiform seizures. The spasmodic tic of the face and lids in children of from five to eight years of age is always dependent upon teething. Have the proper teeth extracted, promote the cutting of the new ones and all these affections will disappear.

At the time of the reassembling of the schools, you may be deceived by a certain number of children. A boy who has been subject to tic, and who finds his holidays have not been long enough, will endeavour to add to them by simulating this form of contraction. The diagnosis of shamming is easy enough. Begin by looking to see whether there are any diseased teeth or not. If there are none, make the child perform certain movements and draw his attention to some object. If the tic really exist it will increase as the child's attention is excited. If there be any form of malingering the contraction will give way while the eye is fixed.

The third dentition may also be the starting point of various visual disorders. The cutting of the wisdom teeth may be accompanied with very violent pains, and it may even cause such a violent form of inflammation of the eye that you may be obliged to have the teeth removed to prevent the destruction of the cornea.

At all ages also, dental caries is a frequent cause of eye trouble. In adults, the most dissimilar forms may be met with, but the most common one is accommodative asthenopia due to reflex action. What is accommodative asthenopia? It is a fatigue of the accommodative apparatus, resulting in an utter impossibility to fix the eye on an object one is anxious to examine, or to apply oneself to any work without at once feeling violent pain in the temples; the eye becomes congested and weeps, the sight becomes dim and the sufferer is obliged to rest for awhile to get calm again. If he soon feels better and wishes to resume his work again, the same symptoms reappear in the course of two or three minutes. We owe all we know about asthenopia of accommodation to the works of Von Graefe and Donders; but they attributed it to some defect of refraction. Donders, who published such a remarkable study of refraction, found that hypermetropic persons became so fearfully tired when they began to work that they were unable to continue. From this he concluded that by supplying them with glasses suited to their degree of hypermetropia we should avoid all efforts at accommodation which brought out the fatigue. That was his theory of asthenopia of accommodation and its treatment.

Here is an eye which receives parallel rays of light at a point behind the retina, and which is therefore quite unsuited to see even distant objects. By an effort at accommodation, vision becomes distinct. Donder's views, which are quite correct in the case of an hypermetropic eye, have been generally accepted, and accommodative asthenopia is admitted by all not to occur except in conjunction with some defect of refraction. Well, I state most positively that every person who has asthenopia of accommodation is not *ipso facto* afflicted with some anomaly of refraction and is not in want of glasses, for asthenopia of accommodation may be, and often is the result of some change in the fifth pair, the result of dental caries. Let me describe in connection with this two curious cases which will help you more than all my demonstrations.

Towards the middle of April, 1887, I was consulted by a young American who has for the last two years been in Europe prosecuting his studies of law, which he commenced in America. In consequence of the pain he felt in his eyes while at work, he consulted one of our confreres who detected asthenopia of accommodation, and ordered convex glasses. As the pain and fatigue increased, the young man took further advice, and consulted a large number of oculists who all and every one confirmed the diagnosis of the first medical man, so much so that in a short time he found himself possessed of four pairs of glasses which were of no use to him, for the asthenopia had reached such a degree, that he was unable to do any work. He determined to rest and to travel. On his arrival in Paris he applied to me for advice. I examined him most attentively, and could find neither hypermetropia nor astigmatism. Not finding any cause for the eye trouble in a defect of refraction, I examined the teeth to see whether they might not be affected in some way, and I found the two upper molars decayed and stopped with gold. I next tested the sensibility to pressure of the supra and infra orbital nerves, for this is the testing point of these affections. I had hardly placed the end of my forefinger on their points of emergence when the patient complained of great pain. There could now be no doubt about it. I was dealing with a case of reflex asthenopia due to some dental affection, and my diagnosis was confirmed by the patient telling me that the eye trouble had commenced two years previously, and that his molars had been stopped also two years before.

I sent him at once to a dentist, who removed all the gold contained in the two cavities, the relief was instantaneous and so great that the young student came to me and told me he was quite well again. I was not, however, yet satisfied, and insisted on the two teeth being extracted. A few days afterwards, the patient was able to resume his work, and to study for a long period at a time without feeling tired. What could have been the genesis of the neuritis of the fifth pair, and of the asthenopia? The gold which filled the carious cavities had compressed the dental nerve, and by leading to its irritable condition had given rise to all the ocular symptoms through the medium of the supra and infra-orbital nerves.

A few days ago, I saw a patient I had cured four or five years ago. He is a clerk in the Russian foreign office, who for three years previously had had the greatest difficulty in getting through his work. He had taken medical advice in several cities of Europe. I also examined him and found nothing amiss with his eyes. But I noticed that his third upper molar tooth was decayed. I asked him to part with it. On the very evening of the day on which he had it extracted, he was able to go to a cafè, and to read the papers without feeling any inconvenience. When he got home again he tried to read out of curiosity and was not in the least fatigued, in fact he was cured. This occurred, I may tell you, three years ago and he has never, he tells me felt any ill effects since.

Cases of this kind are very common. Every time you find you have to deal with a case of asthenopia of accommodation for which the condition of the refraction is not sufficient to account, inquire into the state of the dental apparatus, of the upper jaw especially, and in most cases you will find lesions that will suffice to explain the ocular phenomena.

There can be no doubt about the fact that the teeth take a most important part in the causation of ocular troubles. When they first make their appearance, when they are decayed or at the time of their removal. I remember having been asked by Professor Richet to see a patient at the Hotel Dieu, a young man aged twenty, who had suddenly lost his sight, as a result of the extraction of a tooth from the upper jaw on the corresponding side. The ophthalmoscopic examination was quite negative. It was a case of reflex amaurosis, which gradually disappeared in the course of a few days.

The same phenomenon may be observed in highly nervous women, sometimes it may be brought about by a decayed tooth. I have met with this form of blindness in two cases, and in both the removal of the tooth was at once followed by a perfect cure. In one case the patient was a young girl with unilateral amaurosis. I sent her to a dentist; as soon as the tooth was extracted the patient called out: "I can see, I can see," the decayed tooth was buried in the midst of an osteo-periostitis of the jaw and was bathed in pus.

A few weeks ago, I saw at my clinic a young girl with exophthalmos on the right side together with optic neuritis and blindness. The most careful examination showed nothing in the orbit. But on the same side in the upper jaw, she had a decayed molar which gave her a good deal of pain. I sent her to our colleague, Dr. David who removed the tooth. The extraction was followed by a free flow of pus from the antrum which was filled with it. A few antiseptic irrigations sufficed to allay the inflammation, the pain decreased and exophthalmos subsided. Unfortunately the blindness remains for atrophy of the optic nerve followed its inflammation.

There is an ocular symptom very commonly met with in dental affections, *i.e.*, mydriasis. As you are aware spontaneous dilatation of the pupil of one eye is usually considered to mark the onset of paralysis of the third pair, due either to syphilis or to ataxia ; the prognosis in such cases is of course very grave. Happily it also has another cause but which is often overlooked, in eight cases out of ten it is brought about by some dental affection. I had occasion to treat a confrere who was affected with unilateral mydriasis, and who had been told that it was the beginning of locomotor ataxia, though he had never shown any sign of syphilis. You may guess what his state of mind must have been. He, however, exhibited no other symptom of the spinal affection. On the other hand he had a decayed molar tooth in the upper jaw, only it was on the opposite side to the mydriasis. I nevertheless advised him to have it removed and three weeks later the pupils were equal in size. The dilatation on the right side had entirely disappeared.

You see therefore however varied and numerous are the ocular troubles caused by a lesion of the fifth pair of cranial nerves, the change in most cases being brought about by some dental affection. You may also see how great our responsibility will be, if we fail to observe everything, and allow the patients to go on suffering for years, when the remedy is so easy of application and the cure is rapid.

DEFECTIVE ARTICULATION THE RESULT OF CLEFT OF THE PALATE.*

BY WILLIAM VAN PRAAGH.

I NEED not explain to you, gentlemen, the appearance of the palate, and other parts of the mouth-cavity, in the case of persons suffering from cleft palate and hare-lip. The upper lip may be fissured through imperfect development, and there may also be a more or less decided fissure of the palate. In slight cases the uvula simply is fissured ; in extreme cases the cleft extends through both the soft and hard palates, as far forward as the lip, and is often combined with hare-lip. Whatever surgical skill is brought to bear upon the healing of the fissure, or whatever comfort is given to the sufferer by your mechanical aid in the way of artificial palates, false teeth, &c., one great congenital fault remains, viz., a painfully defective articulation, which, in some cases, produces quite unintelligible speech, and makes the sufferer practically dumb.

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* A paper read before the Odontological Society of Great Britain.

All I wish to call your attention to is this: that with scientific and judicious treatment, sufferers from cleft, and hare-lip of all degrees of severity, can be taught to speak in a perfectly intelligible manner. From my own practical experience, extending now over more than twenty years, I may confidently assert that the worst speakers can be made able to communicate comfortably with strangers; men, women, and children, whose articulation was so bad that I myself could not understand them at our first interview, have spoken quite intelligibly after some months' treatment.

You must have noticed, in your professional experience, that defective articulation, consequent on cleft, varies to an immense degree, which degree depends upon the greater or lesser severity of the faulty organs. The question is, what means to employ, to produce clear, intelligible enunciation? The great trouble we have to contend with, is defective breathing. The air, instead of being forcibly expelled from the mouth-cavity, travels about and finds an outlet through the nose-cavity. We find that, in some cases, the patient cannot whistle, or even puff out his cheeks; in fact, the lower jaw seems to be paralyzed. In the first instance, I advise the adoption of a gymnastic practice; making the patient move his under jaw and tongue *ab lib.*, and exercising him in abdominal breathing. Besides the benefit to the articulation, these exercises for putting the tongue, jaws, and lips in proper position, very often improve the facial appearance of the cleft palate sufferer.

The use of a looking-glass is of great assistance to the patient in self-practice. The tongue should be kept flat by means of an ordinary spatula, and the patient taught to respire properly through a widely opened mouth. Where the upper teeth fail, the upper jaw must do duty for the teeth, as for example in the production of the "t" and "s."

This short communication does not enable me to explain in detail the imperfections in the pronunciation of each letter which may be faulty, or entirely missing in the articulation; nor can I give you an exhaustive analysis of the treatment and cure of every error in the articulation of the cleft patient;

suffice it to say that, amongst the defective consonants, t, k, s, and l, are the most prominent. Besides the defective production of single letters, the speech of the cleft palate sufferer is, as a whole, replete with other deficiencies. As a rule, he runs his words one into the other, speaks very fast, and occasionally, is not himself aware of his imperfections, which makes the treatment a little more difficult. Besides which, the near relatives and intimate friends of the patient become so accustomed to his faulty articulation, that they cease to look upon it as such, and often seem baffled and annoyed when strangers confess that they cannot understand their friend's speech.

We have to do away with the nasal twang of the speaker, and, as a rule, we do this by means of gymnastics of the respiratory organs. If, in some cases, we do not quite succeed in entirely subduing that nasal tone, we are always able to reduce it to a minimum—say to the tone so popular with our transatlantic brethren.

Skill, patience, and enthusiasm on the part of the teacher, and perseverance on the part of the patient, will work wonders.

To sum up. We advise gymnastics of the jaw, tongue, lips—in fact, of all the moveable parts of the head; practice before a glass to improve facial expression; exercises for teaching the patient to breathe properly; exercises for pronouncing vowel sounds, consonants, compound consonants, and all sound combinations distinctly, and when more perfect, connectedly in sentences; and lastly, we make the patient speak and read according to the recognised laws of elocution, and by so doing, he obtains proper modulation of the voice, and fluency of speech.

To conclude. As I said at the commencement, you, in your profession as dental surgeons, can bring mechanical aid to bear upon cases of cleft, you can give the greatest comfort and relief to your patients, but whatever your art may accomplish, the defective articulation remains; and in talking over my mode of treatment with my friend Mr. Willoughby Weiss, your esteemed Secretary, it was he who suggested to me the advisability of bringing this matter under your notice; and, on behalf of speech sufferers resulting from cleft, I must, in the first instance, thank him for his kind suggestion; and, econdly, thank your Society for allowing me to lay these few bservations before you.

SOME SURGICAL CONDITIONS IN CONNECTION WITH DENTISTRY.*

By Paul Swain, F.R.C.S., Surgeon to the South Devon and East Cornwall Hospital.

Gentlemen,—Before proceeding to the immediate subject of this address you will permit me to remark that it is a matter of considerable congratulation that the relative position of the dental and medical professions enables a member of the latter to take part in proceedings such as to-day. The science of dentistry and the practice of surgery overlap each other, and it cannot but be to our mutual advantage for the art of surgery to be represented, however feebly, at your deliberations.

In undertaking to address you I have thought it advisable shortly to touch on some few topics of interest to both professions, rather than devote the time at my disposal to one subject which might prove a well worn one, or of little moment to the majority of your members. First, then, let me allude to the extraction of deciduous teeth. It is a question which constantly arises between medical men and their patients. And I have gathered that there is a strong popular prejudice against the removal of deciduous teeth, on the ground that there follows a contraction of the jaws which exercises a prejudicial influence on the permanent teeth from overcrowding. I am not aware what is the generally received opinion on this point amongst dental surgeons, but for myself, I may state, subject to your correction, that like many other popular ideas, this one, as to the contraction of the jaws after the removal of deciduous teeth, is a delusion. It is an anatomical fact that the alveolar processes develope quite independently of the teeth. The additional room required for the increased number of permanent teeth, is provided for by an increase in the length of the jaw which takes place *behind* the position of the deciduous teeth. In proof of this, the sacs of the permanent molars are found in the tuberosities of the upper jaws and the coronoid processes of the lower jaws, but as the jaws elongate and straighten out they assume their proper position. It stands, then, to reason that the removal of a carious deciduous tooth can have no effect on the after development of the jaw. And it is probable that a correct appreciation of this fact may save many an unfortunate child from nights and days of agony, and confer peace of mind, to say nothing of rest of body on many an anxious parent.

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* Read at the Annual Meeting of the Western Counties Branch of the British Dental Association, held at Plymouth, July, 1888.

I am almost ashamed to call your attention to my next subject. It is the many forms of deranged conditions of health resulting from imperfect mastication owing to absence of proper and efficient grinding teeth. Can anything be more trite, at any rate, to the dental mind? And yet the experience of my consulting room impresses on me the fact that in my own profession what seems so palpable is constantly overlooked.

It is needless for me to describe to you the confirmed dyspeptic to whom life is a burden, and who is in turn a burden to his friends. To him work has no pleasure, and pleasures have no joy. He has run the gauntlet of physicians without number. He has consumed bismuth by the pound, and drank the mineral acids to excess. He has been dieted until the horse who was brought down by his frugal master to one straw per diem, is hardly in it with him. And still his imperial stomach dominates him ruthlessly. He is so prepared by long experience to show you his poor coated tongue that when you ask him to open his mouth, he immediately protrudes that organ. When you have arranged that matter and examine the cavity of his mouth you find the cause of all his troubles. Probably the lower molars on one side are gone, and the upper molars on the other, or else are useless for mastication. He is not like an aged gentleman I know, who still retains his mental and physical vigour, and is an absolutely bad bargain for the profession, and who boasts that he has but one tooth left in his head, but with that one he can crack a nut. And here let me remark that the man with no teeth at all is far better off than a man with a tooth here and a tooth there. His gums harden and become like the mandibles of a turtle. He has lost absolutely his grinding power, and with it the first and essential physiological process of nutrition. You will bear me out that I am in this description not drawing on my imagination. I can safely say that hardly a week elapses that I do not meet with cases more or less such as I have just sketched. My difficulty is not in deciding as to what advice to give, but to get these unfortunates to follow it. They have become so accustomed to be auscultated, to be percussed, to be palpated, and to be physicked, that the simple dictum "go and get some artificial teeth" is to them what "go and wash in Jordan seven times" was to the Assyrian of old. They go away in a rage.

By a natural sequence I next beg to call your attention to one at least of the drawbacks to artificial teeth, namely, the facility with which they are sometimes swallowed, or sucked into the air passages. The most striking instance of this latter kind is recorded by Dr. Gross, Professor of Surgery to the Medical College of Philadelphia. Here four artificial incisor teeth connected together by metal were sucked into the windpipe, and after a lapse of thirteen years were found in the right thoracic cavity into which they had passed by ulceration.

There are on record a number of cases in which artificial teeth have been swallowed. They go down in good company, for amongst the various digestible articles introduced into the stomach I find recorded, nails, knives, spoons, forks, a door key, which was restored to its owner after four days, a horse shoe, a brace buckle, dominoes, a rosary with seven medals attached (evidently taken by some good Protestant who wished to put down papistry), one pint of fruit stones, which were removed after death, and which were heard to rattle during life, thus proving that truth is sometimes stranger than the fiction of Dickens.

There is a curious case recorded in the *Lancet* of January 7th, 1882, by my friend, Dr. Easton. "On May 6th, 1871, he was called to a young man, who during the previous night had swallowed three artificial teeth attached to a gold plate. He prescribed for him, and on May 8th, after an enema, the teeth were expelled into the night stool." Dr. Easton continues :—"My patient, after cleansing the teeth, returned them to his mouth, and went out to supper." This was remarkable ; as Shakespeare hath it, "and then to breakfast with what appetite you have." But Dr. Easton goes on, "now comes *the* remarkable part of the case. On the 24th of May, 1880, I was again called to see him, and found that during a violent epileptic fit he had once more swallowed the *same* plate and teeth. Nothing was seen of the teeth until the 25th of June, when he passed them with a motion without pain." Dr. Easton does not tell us whether he again promptly utilised his recovered property.

Another case of great practical bearing is reported in the same vol. of the *Lancet*. A gentleman was found drowned from a bathing-machine on Southsea beach. On examination, it was found that his artificial teeth had become displaced and blocked his windpipe. It was thought that in the act of diving he had taken a deep inspiration, and that thus his artificial teeth were sucked into his open glottis. Last June I saw a young lady, æt. twenty-two; three months previously, during her sleep, she suddenly awoke and found a front artificial tooth at the back of her throat. According to her description the tooth was fixed in a vulcanite plate, which fitted the whole front of the mouth, and was fixed by gold hooks to the right bicuspid on one side and the left incisor on the other. Before she could recover herself she had swallowed the tooth and its attachment. She immediately saw a medical man, who could discover no signs of the missing tooth. Since then she had felt great pain in the upper part of the back, and during the act of swallowing. I passed a horsehair probang and found considerable resistance to its passage into the stomach into which it entered with a jerk. I failed, however, to produce the teeth. I presume that up to this time it has not been passed per rectum, or I should have heard of the event. Looking to the evident obstruction at the junction of the œsophagus with the stomach, together with the existing pain, it is quite probable that the foreign body may be impacted at that spot.

In 1885, Professor Bilroth, of Vienna, removed a set of artificial teeth from the œsophagus by œsophagotomy, and shortly after he opened the stomach of a girl of seventeen and removed a set of teeth which she had swallowed during her sleep. Both cases recovered. It is hardly necessary to remark that in nearly all the cases recorded of this accident, the teeth have been swallowed during sleep. The reiteration of the fact may cause us all to be more emphatic in our directions to patients, never to sleep with artificial teeth in their mouths. One other precaution it is also needful to enforce, and that is, to insist on the removal of artificial teeth before the administration of an anæsthetic.

I will now make a very brief reference to the accidental surgery of the jaws. I believe it to be a golden rule in all such surgery to be strictly conservative. However extensive may be the injury either to the soft or bony structures, we must remember that there is no part of the body where the reparative process is so rapid, and no portion of bone or any tooth should, if possible, be sacrificed. There is an exception to this latter rule, where teeth are loosened in the immediate neighbourhood of a fracture of the lower jaw, when, I think, it is better practice to remove them, as they are apt to slip between the fractured ends of the bone. In severe fractures of the lower jaw, especially when compound, I cannot praise too highly Hammond's wire inter-dental splint, which I have been permitted to figure in "Surgical Emergencies." It is seldom that injuries to the upper jaw require much treatment. But one case which some time ago I was called into the country to see, was of such an interesting character, that I will relate it. A gentleman rode his horse at a hedge. His horse made a mistake, and rider and horse fell on the other side. When I saw the gentleman some hours after, I found that all the incisors of the upper jaw had disappeared, and that, in consequence, the two maxillæ had fallen together, the keystone of the arch being gone. I put him under chloroform and made a careful examination of the injury, and in doing so I observed something white appearing up one of the nostrils and struck it with a probe. To make a long story short, I found that the four incisors with the entire alveolus had been forced up into the cavity of the nose. I was able with little trouble to pull them down into place, and wiring them to the contiguous teeth they remained in admirable position, and the gentleman made an uninterrupted recovery without the slightest trace remaining of his severe injury.

I am never present at dental operations without admiring the dexterity and rapidity with which they are generally performed. The confined space in which you have to work and the difficulty of getting rid of the blood are serious handicaps to oral operations. There are one or two points I would mention, more by way of suggestion than criticism. First, with regard to the use of the gag. The boxwood gag has always appeared to me a most inconvenient instrument. It is placed in a central position, obstructing light and interfering with manipulations, and is, moreover, so easily slipped out of place. Its insertion, before the administration of the anæsthetic, is inconvenient, and sometimes alarming to the patient, and I have heard it remarked that sickness more frequently follows when this form of gag is used. I cannot confirm this from my own experience. I am glad to see many dentists are now using Mason's gag, or some modification of it, which certainly does away with all the objections I have urged against the boxwood gag. One other remark with regard to the method of freeing the mouth from blood. I believe for this purpose there is nothing like small compact sponges wrung out perfectly dry from water. A small sponge fixed on a sponge holder, such as the one I show, will enable the operator to clear the mouth from blood, and, what is also of great consequence, to sponge thoroughly the pharynx during the administration of anæsthetic. A better form of sponge holder, which I have recently adopted, is the one I show you, which enables the operator to pick up and release his own sponges. I find in all operations about the jaws, in which I need not tell you the bleeding is sometimes terrific, that fine cupped sponge firmly rammed into the bleeding cavity is most effective, and I can quite conceive that in extensive dental operations, where, for instance, many teeth have to be removed from both the upper and lower jaws, some such device might be found useful to the dental surgeon.

THE DEVELOPMENT OF THE TEETH, WITH DEMONSTRATIONS OF THE FORMATION OF DENTINE FROM THE ODONTOBLASTS AND FIBRIL-CELLS.*

By Dr. R. R. Andrews, Cambridge, Mass.

The subject to be considered is the formation of dentine from two varieties of cells,—odontoblasts and fibril-cells. The processes of the development of a tooth up to the formation of the dental follicle are known, and need not be considered. After calcification commences, and after the action of reagents on these tissues to prepare them for microscopical examination, there comes in a diversity of opinion among the workers in this special field of histology. The methods of preparing the tissues which are commonly used are far too harsh for the delicate structure of a developing tooth, and there is very little satisfaction in working from tissue that has been prepared under the ordinary methods.

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* A portion of a paper read before the New York Odontological Society Reported in *Dental Cosmos*.

The preparation of the tissue from which my photographs are made differs very considerably from the foregoing. I take the forming teeth from the jaws of embryos, at or nearly at the time of birth, while the tissue is still warm. These are placed in a quarter of one per cent. to one-half of one per cent. solution of chromic acid, which is changed daily for three or four days. At the end of this time the edges of the dentine that were calcified are found to be sufficiently softened to make a number of sections. The teeth are taken from the acid solution, washed in distilled water, and then placed in a solution of gum-arabic for several hours. They are then put in a solution of alcohol to take out the water. Parafin and lard are melted together and poured into a convenient mould. When the former is clouded in the process of cooling, the tissue, which has had its outer surface dried as much as possible with bibulous paper is placed in it and allowed to cool. I cut until the calcified tissue is reached. The method has cost me a number of fine knives, for each cutting ruins an edge. But I have the satisfaction of working as near life as we can with our present knowledge. After cutting the sections they are placed in distilled water for a few minutes to dissolve out the gum, and are then mounted in Markoe's glycerine jelly. The difference in the appearance of the tissue prepared by this method is marked.

After much thought and investigation, I am forced to believe that there are two varieties of cells called into action in the formation of the dentine—the odontoblast, which is little more than a mass of membraneless protoplasm, and a cell having a higher vital function, the fibril-cell or dentine-corpuscle. In the formation of the bones of the jaw I also believe there are two forms called into play—the osteoblast or matrix-former, and a cell having a higher vital fnnction, the bone-corpuscle, which remains as a nourishing centre within the lacunæ ; and also, in the formation of the cementum, there are the cementoblast, or cement matrix-former, and the cement corpuscle, which is a nourishing centre within the calcified cement.

In the developing cementum the cementoblast can be seen forming the cementum, and there is an absence of other kinds of cells than the cementoblasts until we reach the deeper portions. These cementoblasts, by losing their identity in the process of calcification, form the thinner layers of cementum found just below the neck of the tooth, and, before becoming thoroughly identified with the already formed cementum, show a part of their former contour. Other cementoblasts are supplied by the adjacent embryonic elements, and the process is continued until the thicker portion of the cementum is reached. Then we find a cell having a higher vital function. It is the cement-corpuscle, and we find it surrounded and inclosed by the matrix which has been formed by a direct calcification of the cementoblasts.

Tomes, speaking of the formation of the bones of the jaw, says ("Dental Anatomy," page 156); "As the osteoblasts calcify they lose their individuality, and all traces of the great majority of them disappear. Some of them, however, retain their individuality as encapsuled lacunæ." It will be seen that he makes no distinction between these two kinds of cells; but there is a marked distinction. One has a higher vital function than the other,—that is, the nourishment of the basis-substance. While admitting that there are two forms of cells active in the formation of the jaw-bone, he does not admit the same in the formation of the dentine, yet says, "No one can speak of a young, active odontoblast as drawn out into the dental fibril. These cells are square and abrupt toward the dentine. They do not taper into the dental processes in the smallest degree."

While these masses of protoplasm, the odontoblasts, are square and abrupt towards the dentine, it is a very easy matter to find among them, and just adjacent, large numbers of pear-shaped cells, drawn and tapering into the dental fibril. These are the true fibril-cells. The odontoblasts, having no membrane, which are square and abrupt against the dentine, are hardly more than granular masses of protoplasm when calcification is active. At this time there is hardly a trace of a nucleus; the fibrils which appear to come from them, described by Tomes as pulp, lateral, and dentine processes, originate really from the fibril forming cell. They are forced into the edges of odontoblasts sometimes by pressure, and seem to be a part of them, but in fresh, thin sections I have seen these so-called processes move in the substance of the odontoblast by pressure on the cover-glass, tracing them to a fibril-cell beyond. These fibres cling to them after the process of granulation and calcification commences, and in the action of separating the cells these fibrils break, clinging to the odontoblast, hence the lateral, pulp, and dentine processes of Tomes. It is a difficult thing to demonstrate these processes in cross-sections of the the odontoblasts, but I am very certain I have seen them with a fine glass of high power. They appear as very delicate white spots in the substance between the odontoblasts, or just within the edge of them.

When the layer of odontoblasts is teazed away from the forming dentine, processes are seen pulled away from the tubes of the formed dentine, being apparently offshoots from the odontoblasts ; but on careful examination there will always be found a line of demarkation between the process itself and the square end of the cell. This line seems to be a slight layer of calcoglobulin, and I have specimens which show these cells whose side masses of protoplasm have been pulled away, leaving a slight cross line of calco-globulin that was up against the forming dentine, and also a ragged continuance of the process running into the pulp-tissue adjacent with every appearance of having its origin there.

The fibril-cell, having a higher functional purpose than the odontoblast, is found to be almost always pear-shaped, having a process or processes next towards the dentine and having sometimes a smaller process running into the tissue of the pulp. These cells are found in the layer with the odontoblasts, as well as in the pulp-tissue adjacent—the fibril being either long or short as the case may be. The fibril-cell is never found to be abrupt and square against the forming dentine, although sometimes it has an appearance of that kind when there are two processes running into the dentine from a single cell, such as are found in newly-forming dentine. These afterwards join in one, and are branches of the parent fibril. They are frequently figured as odontoblasts by many writers. They are the origin of the dental fibril, having the same functions as do the bone corpuscles in the formation of bone—namely, the nourishment of the basis-substance or matrix. Lent, who was a pupil of Kölliker, figured the fibril-cells with their long processes many years ago. These are mistaken by Tomes as aged and spent odontoblasts.

When a tooth is fully formed, most of the writers picture the pear-shaped fibril-cells as odontoblasts. We find them on the periphery of the mature pulp, surrounded by embryonic elements, and it is from these elements, and not from the pear-shaped fibril-cells, that any addition to the walls of the pulp-cavity is formed. Called into activity, these elements become odontoblasts or osteoblasts, in the same manner as do the embryonic elements in the substance of the pericementum or periosteum become osteoblasts or cementoblasts when exostosis or hypertrophy of the parts occur.

Between the dental fibril and the formed dentine surrounding it there exists a thin layer of partially-calcified tissue. This is always found between the organic and inorganic tissue in the development of bone, dentine, or cementum. It is the earliest stage in the process of calcification, and it is a part of the calcified tissue. It has been named, by Prof. Harting, "calcoglobulin." Of it Mr. Charles Tomes has written: "The insoluble salts of lime are altered in their behaviour by association with organic compounds,—a fact which was first pointed out by Rainey, and has been more recently worked out by Prof. Harting and Dr. Ord. If a soluble salt of lime be slowly mixed with another soluble capable of precipitating the lime, the resultant lime-salt will go down as an amorphous powder, or under some circumstances in minute crystals; but in the presence of gelatin, albumen, and many other organic compounds, the form and physical character of the lime-salts are materially altered, and in the place of amorphous powder there are found various curious, but definite, forms quite unlike the character of crystals produced without the intervention of the organic substance. Mr. Rainey found that, if, calcium-carbonate be slowly formed in a thick solution of mucilage or albumen, the resultant salt is in the form of globules. Globular masses at one time of mulberry-like form lose the individuality of their constituent smaller globules, and become smoothed down to a single mass; and Mr. Rainey suggests, as an explanation of the laminated structure, that the smaller masses have accumulated in concentric layers, which have subsequently coalesced; and in the substitution of the globular for the amorphous or crystalline form in the salts of lime, when in contact with various organic substances. Mr. Rainey claimed to find the clue for the explanation of the developement of shells, teeth, and bone. At this point Prof. Harting took up the investigation and found that other salts of lime would behave in a similar manner, and that by modifying the condition of the experiment very various forms might be produced. But the most important addition to cur knowledge made by Prof. Harting lay in the very peculiar constitution of the calcospherites, by which name he designated the globular forms seen and described by Mr. Rainey. That these are built up of concentric laminæ like an onion has already been mentioned; and Mr. Rainey was aware that albumen actually entered into the composition of the globule, since it retained its form, even after the application of acid. But Prof. Harting has shown that the albumen left behind after treatment of a calcospherite with acid is no longer ordinary albumen. It is profoundly modified, and has become exceedingly resistant to the action of acids, alkalies, and boiling water, and in fact resembles chitine, the substance of which the hard skin of insects consists, rather than any other body. For this modified albumen he proposes the name of 'calcoglobulin,' as it appears that the lime is held in some sort of chemical combination; for the last traces of lime are retained very obstinately when calcoglobulin is submitted to the action of acids. The calcospherite, then, has a true matrix of calcoglobulin, which is capable of retaining its form and structure after the removal of the great bulk of lime. Now, it is a very suggestive fact that in the investigation of calcification we constantly meet with structures remarkable for this indestructibility. For example, if we destroy the dentine by the action of very strong acids, or by variously construed processes of decalcification, putrefaction, &c., there remains behind a tangled mass of tubes, the dentinal sheaths of Newman, which are really the immediate walls of the dentinal tubes. Or, if bone be disintegrated by certain methods, there remain behind large tubes found to be the linings of the Haversian canals (Kölliker), and small rounded bodies recognizable as isolated lacunæ, and in the cuticula dentis we have another excellent example of this peculiarly indestructible tissue. In point of fact, as will be better seen after the development of the dental tissue has been more fully described, on the borderland of calcification, between the completed, fully-calcified tissue and the formative matrix, as yet unimpregnated with lime, there very constantly exists a stratum tissue which in its physical and chemical properties very much resembles calcoglobulin."

I have devoted much of my leisure time during the last three months to the study of the calcospherites, and the tissue which is formed by the coalescing of them into the layer we call calcoglobulin. This study has strengthened me in my conclusions in regard to the formation of the bones of the jaw, the cementum, and of the dentine by the two varieties of cells. The first variety of these cells seems to have little or nothing to do with the formation of the organic substance. Like the cells which form the enamel, nails, and hair, they are matrix-formers or builders, while the bone, cement, and dentine-corpuscles (the fibril-cells) which are imprisoned in the matrix by these builders have a higher vital function, and that is supplying the matrix with its nourishment. A recent writer informs us that the osteoblasts, in forming the jaw-bone, individually become calcospherules, and after becoming impregnated with salts of lime on their outer surfaces, thus forming the matrix develop into the bone-corpuscles within; but wherever I have seen these calcospherites on the edges of the calcifying tissue they are losing their globular form, to become by coalescing a layer, taking into their substance osteoblasts, or odontoblasts, as the case may be. This is the layer Prof. Harting tells us of, calcoglobulin; and although it is demonstrated by the action of acids, it is evident that before this action on the tissue it was of a different nature than either the fully-calcified or the organic tissue from which it developes. Were it possible to study this layer during the life of the tissue, we might get at exact knowledge; for I am convinced it is in this that the secret is guarded,—locked in by death of the part. Yet we see enough to give an idea of what it might have been. In the cementum the matrix-formers are first inclosed, or partly inclosed, by rows of these globular masses, and a layer of calcoglobulin is formed. The cement-corpuscles inclosed within the matrix are larger than the osteo or cementoblasts, as a rule, and vary much in shape and size. They are less numerous than in bone. If we study the process by which a pulp within a fully-formed tooth calcifies, we shall see that it is at the expense of the embryonic elements of that pulp. So, I believe, the dentine is formed at the expense of the elements of its formative pulp, and not at the expense of its edge-cells alone. I cannot tell just how much one cell may contribute to its line of calcified tissue from its outer surface to the pulp, but I have seen enough to convince me that it does not form the whole of it. We frequently see cell joining cell in the forming dentine among the odontoblasts.

British Journal of Dental Science.

LONDON, SEPTEMBER 1st, 1888.

IDIOSYNCRASY AND THE USE OF POISONS.

To Dentists who employ many of the strongest poisons in the routine of their work, the knowledge of how these agents act upon the organism, cannot be a matter of slight import. It has long been known that certain persons are peculiarly sensitive to the toxic powers of some one on more poisons, evincing in a startling, if not alarming degree,all the symptoms of poisoning even when the most minute doses have been administered. Of course the term poison, is really an inadequate one, since, as far as individual idiosyncrasy goes, the most harmless domestic remedies and even articles of daily diet are poisonous to some unfortunate persons, while other individuals will consume with impunity lethal quantities of the most baleful substances. Thus Mint, will upset many persons and even induce fainting fits; any form of fish gives rise to sickness and extreme prostration in some people, while upon the other hand Belladonna appears to exert hardly any harmful influence, even when taken in the most poisonous doses, over some few individuals. In our last issue we published an extremely interesting and instructive case of poisoning by aconite where apparently the idiosyncrasy of the individual played an important part. Even the most minute quantities of mercury, less than a grain of calomel have been known to give rise to profuse salivation. Cocaine, an alkaloid now in common use among dentists, will affect a considerable number of patients producing faintness, muscular tremors, sickness and hallucinations even when given in very small doses. Aconite has been long known to affect a small per centage of individuals causing most alarming symptoms when taken in infinitesimal quantities, and the toxic effects of even very mild dosage with opium and its alkaloids are familiar to those who practice physic. Chloroform appears to be another drug which exerts a fatally potent action upon some persons. Many, indeed, are the cases in which death has ensued when only three or four inspirations of chloroform vapour have been taken into the lungs; and although, doubtless, in many instances these fatal results are to be attributed to the syncope induced by terror, yet there is left a residuum of cases to explain which we are compelled to assume that some people are so easily affected by minute quantities of chloroform that they succumb to doses which would have no appreciable effect upon the majority of mankind. The idiosyncrasy of individuals to chloroform and other drugs is not really hard to believe, when we consider the phenomenon in its wider aspects. For, just as a certain few out the human race are fatally affected or suffer nervous inconvenience from certain drugs in doses usually held harmless, so are certain races exempt from the toxic power of various animal and vegetable poisons. While some classes of animals will eat with impunity the leaves and green shoots of plants from which are extracted products having the most deadly results if taken by the human race, so will some birds take without untoward results, berries which kill mammals, and even birds of other varieties. Nor is it difficult, when the matter is considered in this connexion, to associate the condition called idiosyncrasy, with the ever varying effects one observes when a number of persons have the same drug administered in the same dose, while some show few, if any, symptoms due to the drug others will be influenced in varying degrees. The consideration of the existence of this condition of idiosyncrasy is one which cannot fail to "point a moral" as far as dentists are concerned. In every instance in which a powerful substance is used whether externally, internally, or hypodermically, it is most important to bear in mind that the patient may be acted upon by even the most minute dose, and so it is incumbent upon the dentist to be upon his guard, and to be prepared with antidotes or other treatment until a medical man is called to the rescue. As Mr. Bellamy's case shows it is not safe to assume "external application" cannot do any harm. Absorption by the mucous membrane has been shown to be very active indeed, besides which the researches Dr. Brown-Sequard appear to point to an unusual receptivity of action on the part of the bucco-pharyngeal membrane, which renders it peculiarly sensitive to the action of local medication, whether the drug is painted or sprayed upon the area in question. Fortunately such experiences as those narrated by Mr. Bellamy are rare, but they are none the less instructive, and certainly deserve the most careful study, and to be held in constant remembrance.

NOTICE TO DENTAL STUDENTS.—We would remind those who are about to enroll themselves in the ranks of the Dental profession, that our next issue is devoted to their interests, and in a full and corrected supplement we give all information respecting the curriculum to be pursued, the fees, the claims of the respective hospitals and schools, and much other matter important to students.

DENTAL STUDENTS AS PRIZEWINNERS AT GENERAL HOSPITALS.—The prize list of Charing Cross Hospital speaks well for the diligence and ability of the "dentals." Mr. A. W. Hoffmann obtained the Materia Medica medal, as well as that for Practical Physiology. Mr. J. F. Colyer that for Obstetric Medicine, Mr. J. H. Day, the medal for Practical Chemistry, and Mr. W. R. Barratt, the Bronze for Osteology.

THE DENTAL HOSPITAL CRICKET CLUB.—This Club has completed its labours for the season and has acquitted itself very creditably. Playing fifteen matches, it has won eight, lost four and had three drawn in its favour. Mr. J. F. Colyer, the energetic captain of the eleven, carries off the

Presentation bat presented by Messrs. Ash having knocked up an average of 25.7 runs, his brother Mr. A. R. Colyer treads on his heels with an average of 24.3 runs. Mr. J. F. Colyer also captured the competition ball having destroyed 32 wickets while Mr. A. R. Colyer follows with 13 wickets. The team play well together and have great hopes of next year mending even the satisfactory figures given above. There is need, however, of another bowler, and until this desideratum is obtained, we believe the Club will refrain from challenging the Australian team! We should add also, that Mr. J. F. Colyer, who has batted extremely well and plays good cricket, received the Hospital bat and earned it!

ANTIPYRIN A HÆMOSTATIC.—Among the many virtues claimed for this drug is that it possesses a marked effect in controlling hæmorrhage from the gums and sockets after tooth extraction.

SUICIDE OF A DENTIST.—Shortly before twelve o'clock on Saturday, 18th August, Mr. W. G. Jones, better known by the name of Mr. Gordon Jones, a dentist, of Brixton Road, drove up to the Galen Club, in Sackville Street, Piccadilly, in a cab with two ladies. Having wished the hall porter good morning, he asked if there was a telegram for him. The attendant replying in the negative, Mr. Jones hung up his hat and coat and proceeded upstairs into the lavatory, where he was subsequently found lying dead on the floor in a pool of blood, with a revolver firmly grasped in his hand. The weapon had been loaded in four chambers, but one only had recently been discharged. By his side was found a packet of cartridges, from which he had loaded the weapon, which was a perfectly new one. He must have placed the revolver in his mouth and then fired, for the bullet had passed clean through his head. No noise or report was heard by anyone on the premises. Mr. Jones read a paper not very long since at one of the B. D. A. meetings, in which he animadverted severely upon the way in which public dental appointments were bestowed.

THE TOXIC PROPERTIES OF EXPIRED AIR.—Messrs. Brown-Séquard and D'Arsonval, seek to demonstrate that *the air expired by man, and mammifers in a condition of health, contains a very powerful toxic principle.* The air expired always contains ammonia, but in quantities too small to have deleterious effects. It contains also a small quantity of organic matter which, though not putrid, in passing out from the pulmonary bronchi displays a great tendency to rapid alteration, even at a low temperature. The exhalations are detrimental not only on account of the carbonic acid which they contain, since air containing more carbonic acid than does expired air is not detrimental. Messrs. Brown-Séquard and D'Arsonval injected in both arteries and veins of a rabbit, water containing the toxic principle produced from pulmonary mucous membrane, sometimes by washing, and sometimes from condensation of the expired air, of men and dogs. The liquid procured from the last was clear, limped, neutral. In the first series of experiments the infection was made pulmonary liquid. The rabbit presented then a pupillary dilatation, respiratory rales, a fall of temperature, and augmentation of cardiac impulse. In the second series the injection was made wide 20-25 c.c. of pulmonary liquid. The effects were then very pronounced, with paresis of the posterior members and choleraic diarrhœa. The death in the last cases occurred always three or four hours after the injection. This could not have been due to the injection of water into the veins, since the quantity was very small, but was probably due to the organic matter. At the autopsy the animal presented a considerable congestion around the viscera, and in the lungs, which were covered with spots of ecchymosis. The lungs of men, dog, and rabbits, in a condition of health, produce without cessation a toxic product, extremely energetic, in the air expired. It is probable that it is this agent which renders confined air so dangerous. Messrs. Brown-Séquard and D'Arsonval continued their researches on the *toxicity of expired air.* The introduction under the skin of the water of the condensed vapours exhaled from the lungs (20-44 c. c.) caused the death of the rabbits in the same manner as the direct introduction into the blood. All the animals inoculated succumbed without agony and after diarrhœa. At the autopsy they presented signs of death by cardiac syncope, with arrest of changes in the tissues and the blood. The toxicity of pulmonary liquid is due to the presence of an organic poison, and not to microbes. After ebullition in a closed flask, it still holds its toxic power. The liquid is alkaline. Its noxious properties are due to a volatile organic poison, and an alkaloid generated in the lungs of man and mammifers.

NERVE TRANSPLANTATION FROM ANIMAL TO MAN.—A novel operation is reported from Vienna as having been performed by Dr. Gersung on the person of Prof. Von Fleischl, who accidentally wounded himself sixteen years ago while performing a post-mortem examination. The result was severe inflammation of the whole right upper limb, which was followed by the formation of neuromata on various branches of the median nerve, to relieve the pain of which, resection of the nerve at various sites was resorted to, causing anæsthesia of the parts supplied by it. Fresh neuromata, however, occurred, and finally the pain became so severe that a further operation became necessary. On March 4th the patient was anæsthetized, and the neuroma, which was situated behind the volar-carpal ligament, was excised. A piece of the sciatic nerve of a freshly-killed rabbit was then obtained and sutured to the ends of the cut nerve, and to the connective tissue between. Healing took place by first intention, and as two months have now elapsed since the date of operation, and the pain has not returned, it is hoped that the so-far favourable result will prove to be permanent. Sensation is gradually returning in the anæsthetic areas. The success of this novel attempt shows that surgeons have not yet attained the limits of the possible in this department.

HOW DOES IODOFORM ACT?—Behring claimed that it was decomposed and set free acetylen; the author failed to distinguish free iodine; he suggests that it may have acted mechanically in the experiments. He summarizes, that, "looked at from the clinical side, the ultimate object of all medical research, the following rules may be accepted: "1. Iodoform, not being a germicide, is not a fit substance to use to procure asepsis of instruments, materials or wounds. 2. Iodoform is allowable, with the present state of our pharmacopœia, in infected wounds, where true germicides are contra-indicated, as by danger of poisoning or impracticability. 3. As has long been known, iodoform has a decided tendency to stop serous oozing, and, therefore, may be indicated in wounds where the moisture threatens the integrity of the aseptic or anticeptic dressing." Some experiments by the author with iodol and salol gave results similar to those with iodoform. The *Dental Register* says, "We still maintain, notwithstanding the above conclusions, that for filling roots of dead teeth, iodoform has no equal; its prevention of serous oozing is a decided advantage."

CHLOROFORM AND THE CONSTANT CURRENT IN NEURALGIA—Prof. Adamkiewicz has, according to *Le Progres Medicale*, obtained marvellous results from the combined action of chloroform and the constant current in facial and other of neuralgia. The electrode is made of hollow charcoal into which the chloroform is introduced, and from which the current sends it into the tissues. That this power of penetration may be thus obtained is thought to be shown in the fact that when chloroform is coloured with gentian violet and applied in the manner described to the ear of a rabbit, the tissue becomes dyed. In the experiments with the human subject, the writer notes, at the commencement, the triple action of the constant current, the chloroform and a condition of cataphoresis followed by a burning sensation and, finally, anæsthesia. Several remarkable cases of cure are cited. Anæsthesia was not obtained when the nerves were deep-seated, nor in sciatica. It does not appear crucial experiment to us, nor does Dr. Adankiewicz show that the chloroform has anything to do with reputed cure, if indeed it be not split up by the current.

CAMPHO-PHENIQUE AS AN ANTISEPTIC has been experimented with for several years by Dr. H. James who finds it has proved the best *antiseptic* and *vulnerary* he has encountered. He has used it in necrosis, burns ; on all manner of wounds, in the abortion and treatment of carbuncles and boils, in the treatment of skin troubles, erysipelas and and kindred conditions, and has found it of universal service. As an *antiseptic* it is the equal of corrosive sublimate, and is entirely devoid of the irritant and toxic properties of the latter.

MANICURE.—Dr. P. Furbringer, of Berlin, has published a pamphlet upon the disinfection of the surgeon's hands and finger-nails. His conclusions are summarised. 1. The nails are to be cleansed dry (scraped or rubbed) from all visible dirt. 2. The hands are to be thoroughly scrubbed with a brush for a minute and a half in hot water and soap, special attention being paid to the edges of the nails. 3. They are then to be washed for one minute in alcohol (not under 80 per cent.), and then, before drying. 4. They are to be put into the disinfecting solution, 2 per cent. sublimate or 2 per cent. carbolic solution, and here to be thoroughly cleansed for another minute. He claims for this method (1) Certainty of disinfection. (2) Saving of the hands. (4) Smaller expense in the use of the sublimate.

ACETO-TARTRATE OF ALUMINUM, THE NEW ANTISEPTIC. —The substance that Athenstaldt recomments as an antiseptic, is prepared by mixing a (1-20) solution of acetate of ammonium and a (1-50) solution of tartaric acid, the double salt formed being obtained by evaporation. Aceto-tartrate of aluminum is a brilliant, colourless substance resembling gum arabic. It dissolves readily in water, has the odour of acetic acid, and has an acid, slightest astringent, but not disagreeable taste. It is soluble in equal parts of water, and the solution remains clear when heated, but is precipitated by alcohol. It becomes less soluble when exposed to the air on account of the loss of the acetic acid radicle of the double salt. Athenstaldt recommends it as a harmless antiseptic.

CARBOLIC ACID AS AN OBTUNDANT. The *Independent Practitioners* says we believe that Carbolic Acid is the best agent for obtunding sensitive dentine which is known to the dental pharmacopœia. A pulp may be painlessly removed by its use if patience be exercised. The extreme sensitiveness that sometimes exists at the ulterior point of a canal may be entirely removed if a little time and care are used in working the agent to the sensitive point. The rubber-dam must of course be first applied, and then a delicate broach, which is dipped in the carbolic acid, should be carefully worked into the cavity, and gradually advanced as the obtunding process goes on. If the cavity or canal be large enough, a film or two of cotton may be wound around the broach. The best instruments for this purpose that we have ever used are the Donaldson broaches and canal cleaners. If one of the latter can be employed, it will, simultaneously with carrying the carbolic acid to place, remove all of the obtunded pulp.

A NEW DISINFECTING COMPOUND for purifying the atmosphere of the sickroom has just been presented to the Berlin Medical Society. Oils of rosemary, lavender, and thyme, in the proportion of 10, 2½, and 2½ parts respectively, are mixed with nitric acid in the proportion of 30 to 1½. The bottle should be shaken before using, and a sponge saturated with the compound and left to diffuse by evaporation. Simple as it is, the vapour of this compound is said to possess extraordinary properties in controlling the odours and effluvia of offensive and infectious disorders.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

DENTAL ANOMALIES.

By John A. Daly, D.D.S., Demonstrator in the Dental Department of the National University, Washington, D. C.

Examination of the mouth of Mah-Phoon, the old woman of the Hairy Burmese Family, aged about seventy years, who was on exhibition. She was a very deaf, blind, untidy, emaciated, and feeble old woman sitting on a mat on the floor. The index finger was introduced into the small and contracted mouth. Offensive pus seemed to exude from around every tooth, and several teeth appeared to be lying loosely in their sockets. It was determined to remove as many teeth as possible at one sitting. A thirty per cent. solution of the muriate of cocaine was applied to the gums, and after waiting a few moments thirteen teeth, were removed—viz., four upper and four lower incisors; one superior cuspid; one lower first bicuspid; one upper second bicuspid; one left upper molar, and one right lower molar. The two molars represent the two double teeth as described by Dr. Caldwell. In reality fifteen teeth were removed. The left side of the alveolar process of the inferior maxilla was extensively hypertrophied, and denuded of its periosteum. Dr. Caldwell described the extracted teeth as follows, in the specimens there are two very remarkable instances of gemination or organic union of two neighbouring teeth. They were covered by a thick layer of dark-brown concretion, the exact nature of which was not determined. The right second molar and wisdom-tooth of the lower jaw were completely joined together so that both crowns and roots are united throughout their entire length. The two roots of the second molar may be easilp made out in the specimen, and just behind them, and completely fused with them, is the connate root of the wisdom-tooth. Still more remarkable than this is the specimen represented by No. 2, wherein the union of two upper molars is confined to the roots, which are so welded or blended together as to leave but little trace of the several fangs. This specimen was at first supposed to be a large-sized molar with an enormous exostosis, but a section through the parts disclosed a pulp-cavity, and close examination revealed the fact that this portion of the mass is in reality the crown of a tooth, made up of enamel, dentine, and pulp-cavity, filled with nerve and nutrient vessels, as in ordinary teeth. The tubercles or cusps having never been subjected to wear, are in a perfect condition on what should have been the top or free surface of the crown, while the roots had become coalescent with those of its neighbour in such a manner that only one of the united teeth could assume an upright or natural position in the jaw, the other being forced into a horizontal position, with only a side protruding above the surface of the bone. This gemination or coalescence of contiguous teeth occurs during an early stage of their development, and is due to absorption of the intervening bony tissue caused by pressure, where as in this case several very large teeth crowd themselves into a very small mouth. Great interest is attached to this case, from the inconsistency of the published history of the Hairy Family and the clinical history and anatomical peculiarities of the patient's teeth.

CONSERVATION OF THE DENTAL PULP.

By J. R. Callahan, D.D.S., Hillsboro, O.

The writer does not attempt to cap more than *one* exposed pulp in *ten*, believing that the arsenic should be applied to all pulps that cannot be restored to perfect health. In a large per-cent of the mouths presented for treatment, the decay has penetrated the tooth to such a depth that, if all the decayed dentine was removed the pulp would be exposed. In fact, it is generally the case that the *pain* in *this* class of cavities is what has sent the person to the dentist. The teeth most likely have been giving trouble for some time. We have to deal with a very delicate organ devoid of tactile sense, which will notbear compression in the slightestd egree, and *extremely* sensitive to thermal changes confined in a narrow, bony chamber. Great care should be exercised to prevent uncovering the pulp, being careful at the same time not to leave too great a thickness of decay over the pulp. The debris should always be removed by a gentle stream of warm water. After preparing the cavity and applying the rubber dam, the layer of partially decayed dentine over the pulp should be thoroughly sterilized, using for this purpose 95 per cent. carbolic acid, having the acid about the same temperature of the tooth; dry the cavity thoroughly, using alcohol and warm air, then cover the decayed dentine with a thick paste of iodoform and carbalic acid, or oil of cloves over this flow a thin paste of oxyphosphate of zinc, and give this plenty of time to harden, when the filling may be completed with cement or gutta-percha. These fillings should be allowed to remain in the tooth until you are satisfied that there is no irritation or inflammation in the pulp tissue. And the same for capping *exposed* pulps If the pulps are in good condition. Considering the restoration to health of diseased pulp tissue, a case in practice is quoted. D. complained of pain in the right superior cuspid. Upon examination a large cavity on distal surface of that tooth, and a small exposure of the pulp were found. The decay was carefully removed, a paste of iodoform and carbolic acid placed upon the exposure, a metal cap was placed over this to prevent pressure, and in this case the cavity was filled with cotton and sandarach varnish. All pain disappeared in a few minutes after the application. The tooth was allowed to remain in this condition for a week. Examination revealed the pulp, to all appearances, to be free from irritation; rubber dam was applied, and the tooth thoroughly dried, paste of iodoform and carbolic acid placed over the pulp and a thin paste of oxyphosphate of zinc flowed over this. After this had hardened the cavity was filled with cement to remain two or three months, when, if there has been no unfavourable symptoms, the tooth will be filled with gold, leaving, of course, the cap as it is at present. Iodoform, has no irritant action, and in small doses is tonic, stimulant, anodyne, alterative and disinfectant; also antiseptic and has great influence upon the nervous system. (Gorgas). When the surface of an ulcer or wound is covered with a layer of iodoform in crystals, a certain degree of absorption of the fluids secreted takes place. The products of secretion penetrating these interstices between the minute crystals of iodoform soon lose the liquid form and produce with them an impermeable crust, and under this crust cicatrization soon occurs without any retraction of the tissue.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING. JULY 4th, 1888.

MR. DANIEL CORBETT, M.R.C.S., L.D.S.,
President, in the Chair.

THE minutes of the last meeting were read and confirmed.

Dr. St. George Elliott was called upon for his communication. He stated that capsicum plasters were among the most efficacious remedies for the treatment of periodontal troubles. Many years ago they had been introduced to the profession, and they had been extensively used ever since. Dr. Darby, of New York, had introduced a capsicum plaster which Dr. Elliott had used with considerable satisfaction. On one occasion being out of these plasters he had attempted to make some for himself, and with satisfactory results. He had employed chamois leather and wash leather, soaking them in tincture of capsicum, adding 10 per cent. tincture of cantharides. After drying, the plasters were punched out of the leather. The effect of the capsicum plasters was better than the ordinary applications of aconite and iodine. The home-made plasters were cheaper and quite as efficacious as those bought in the market.

The President then called upon Mr. Van Praagh for his paper on "Defective Articulation the result of Cleft Palate." [See page 800.]

DISCUSSION UPON MR. VAN PRAAGH'S PAPER ON THE TREATMENT OF CLEFT PALATE.

The President said he felt perfectly satisfied that whatever Mr. Van Praagh promised he was able to carry out in his treatment of cleft palate, but he should like to know if he had succeeded in producing complete nasal resonance without other assistance than that of his gymnastic exercises of the lower jaw muscles. He (the President) had never heard that this had been attempted by any dentist, and he should consider it lay entirely within the province of the teacher of elocution; nor would any member of that Society, he opined, be likely to adopt other principles in their treatment of cases of cleft palate than those already well known to the profession.

Mr. Henri Weiss said that perhaps he might be allowed to make a few remarks. Mr. Van Praagh, in bringing his communication before the Society, had intended to impress upon its members the importance to the patient of lessons in connection with the use of an obturator. He wished to point out the desirability of endeavouring to obtain for patients, as much information as to whether mechanical contrivances made by the dentist, really improved the character of the speech or otherwise. He contended that the difficulties in articulation were mainly due to want of education in the production of sound; in his (Mr. Weiss's) experience, he had found patients who wore obturators sometimes spoke well, whilst others spoke very badly. He had been consulted with a view to his being able to improve their articulation by an improved mechanism. He had generally inquired whether the patient had made any attempt to improve his articulation by practising the production of sound. It was his object in speaking, to point out that though the skill of a dentist might produce a perfectly satisfactory obturator, he might still be unable to articulate with distinctness. He believed Mr. Van Praagh's view was that dentists should see that their patients were put in the way of being taught to speak, either by a professional elocutionist, or some one who had made the subject his special study.

The President said that he could readily understand the value of the treatment suggested by Mr. Van Praagh after an obturator had been placed in the mouth. As to the education of the wearer, he did not consider that more was needed than nature would suggest; the mechanician having accomplished a properly fitting obturator had, he believed, done all that in his power lay.

Mr. Henri Weiss, while deprecating any argument with the Chair, said he would be glad to illustrate his point by reference to a case. A young lady patient wearing an obturator had consulted Mr. Weiss as to improving her articulation, which was not satisfactory. Examination of the obturator showed it was well made and fitted nicely; she, however, had not been taught to speak after its insertion. Mr. Weiss instructed her as to the management of her voice, and she learned to speak clearly.

Mr. Walter H. Coffin said before Mr. Van Praagh replied he should like to say that he had often heard practitioners express surprise that persons, for whom they had fitted carefully made obturators, had spoken not only better, but absolutely worse than before. He thought it had not been sufficiently emphasized that not only does the normal apparatus in different people produce sounds in different ways, but more than that, people deficient in the power or capacity to produce certain parts of speech will make very grotesque grimaces in their attempts to do so. The first result of wearing the obturator is to interfere with their previous methods of forming sounds, and it is perfectly obvious that after the insertion of the obturator their attempts are frequently much worse than before. The point for dentists was that their responsibility did not end after having completed a perfect mechanism and placed it in the mouth, and that the results should not be judged by the mechanism only. Mr. Melville Bell, a great authority on the question, found that those who had attained or passed middle life were not the most successful in overcoming the difficulties of articulation, and Mr. Coffin's own experience showed that they had not done so, but tho obdurator had apparently made matters worse.

The President felt that such a result must have been the fault of the constructor of the obturator.

Mr. Hern asked Mr. Van Praagh if he has applied his system in cases of staphyloraphy.

Mr. Mitchell thought he could endorse Mr. Coffin's statement. In the case of staphyloraphy he thought the operation only did what a well-fitting obturator would achieve.

Dr. Elliott considered that the fact that there were two distinctly different fundamental conditions of cleft palate had not been sufficiently kept in view : they were the congenital and the accidental. In the latter case, the difficulty in articulating sound would not be experienced to anything like the extent that it would be if the cleft palate were congenital. In the case of congenital cleft palate, the patient has never known how to talk, and with the obturator he would probably speak worse than before. Dr. Kingsley, of New York, invariably employed an elocutionist to teach his patients how to talk ; but it would be impossible to teach a person how to talk unless he has an apparatus to talk with. It was curious to observe how the cerebellum and other parts of the body had been affected by the extraction of one or two front teeth.

and speech had been impaired, but in two or three days the affection passed away.

Mr. Van Praagh, in reply, said he was afraid his paper had conveyed a wrong impression. He did not wish to interfere with the province of the dentist or the surgeon. His aim was to make the patient speak well, and his work commenced where surgeon's or dentist's ended. In reference to the surgical operation, he believed that the success of his method depended very much upon the age of the person operated upon; the most successful cases were those of children, although in his experience, which had been large, he had seen numerous successful cases amongst adults.

Mr. Burghard was then called upon to read his paper on "Some Cases of Epulis." [See page 706]

Subsequently a discussion upon Mr. Burghard's paper took place.

Mr. Henri Weiss said it might be of some small interest to the author of the paper to hear about a similar case to those he had mentioned. The vascular growth existed between the first upper molar on the right side and had grown without apparent cause. It became uncommonly vascular and painful; it was about the size of an ordinary raspberry. Mr. Weiss decided to remove it, and did so, but it recurred. There was also severe hæmorrhage. The growth was removed by the aid of caustic potash. The epulis had not recurred since; this was about four or five years ago. The only exciting cause that could be assigned for the tumour was the presence of tartar in the mouth. This was removed, and the patient had since been careful to keep the mouth and teeth clean. To what extent the non-recurrence of the disease was due to more cleanly habits Mr. Weiss was unable to say.

Mr. West had met with a similar case a few weeks ago. It was found necessary to remove the right central and lateral incisor in the lower jaw. The tumour was then removed and treated with nitrate of silver, but it recurred, and after some few weeks it was found to be involving the right canine, when it was decided to remove it. A friend, Dr. Colyer, operated upon the case by excising in the region of the symphysis, and on putting his finger to the tumour it arose out of its bed. It was about the size of a large hazel nut. The alveolar process had been completely eaten away, and there were sharp edges which had to be chiseled away. The patient had since been and was still healthy, and there had been no recurrence of the tumour. It should be remembered that Doctor Colyer characterised the tumour as being of a fibrous nature. The writer of the paper said that sometimes these fibrous growths become sarcomatous, and this reminded Mr. West of a case in which a lady, the wife of a physician, consulted him. A large tumour at the apex of the root of a tooth was removed with the finger. It was about the size of a large pea. He advised her to take it to her husband, who examined it under the microscope and pronounced it to bè a spindle-celled sarcoma.

Dr. W. St. Geo. Elliott said it seemed to him a great pity that dentists should have recourse to the knife in cases of this kind, and that they could find nothing to take its place. Some years ago, he reported before the Society a case of epulis, in which the surgeon stated positively that removal of the periosteum was inevitable. Dr. Elliott begged the patient to allow him to try medicinal means before this was resorted to, with the result that after four applications of ethylate of sodium the tumour was removed and there was no recurrence of it. In these cases ethylate of sodium would be found an exceedingly efficacious remedy.

Mr. Walter H. Coffin wished to ask Dr. Elliott what appreciable advantage ethylate of sodium had over caustic soda?

Dr. Elliott replied it was much less painful.

Dr. Burghard, in reply, said with reference to the treatment of epulis by ethylate of sodium, in certain stages or under certain conditions it was perhaps very useful, but as far as he could see, in well-marked cases of fibrous epulides, it was not likely to do much good. Statistics showed that free excision and the use of the cautery afterwards were often insufficient to permanently remove the growth, and when it recurred it was very often of a sarcomatous nature. He had used caustic potash and even after that the tumour had recurred. He thought the most efficacious way of treatment was to draw the defective tooth, and if the tumour had been growing rapidly, to remove a portion of the alveolar process. He had met with a case in which portions of the alveolus had to be removed, and the microscope showed that the alveolus itself was infiltrated. In the first case mentioned the caustic used was fuming nitric acid; nitrate of silver was tried, but with no effect, and the actual cautery had to be resorted to after all.

Owing to the lateness of the hour Dr. Mitchell's paper was postponed until the December meeting.

The usual votes of thanks to the authors of the papers were taken, and the President announced that at the next meeting in November, Mr. F. J. Bennett would read a paper Upon Some Points in the Anatomy of Dentine.

Dental News.

THE EDINBURGH DENTAL HOSPITAL AND SCHOOL.

The half-yearly meeting in connection with this Hospital and School, was held last night, at 30 Chambers Street, Edinburgh —Dr. Symington presiding. The report for the session, submitted by the Dean (Mr. Wm. Bowman Macleod), stated that it was gratifying to note by the influx of students at the terms of November 1887 and May 1888 that the course of instruction given at the school was growing in professional as well as public estimation. Besides the usual number of entrants from what might be termed outside sources, the number of those of dental parentage or connection was quite marked. It proved that those who best knew the needs of the dental aspirant, recognised the fact that a systematic course of instruction under approved teachers was the proper training for all entering the profession. The retrospect of the session was on the whole exceedingly encouraging. The attendance of the pupils had been regular, and their attention to work had been intelligent and enthusiastic. If the seniors had done well, the juniors had done better, and to them belonged the honours of the year. Not only had all of them given due attention to the special departments in connection with the school, but several had further distinguished themselves by carrying off the highest honours in the medical classes. (Applause.) The prizes in connection with their own department, the Dean added, had been keenly contested. Regarding the successful students to whom prizes were thereafter presented by the Chairman, it was stated that the senior prizes for hospital work had been secured by Mr. Thomas Gregory, who in a former year gained the junior prize. In the junior division, the work of Mr. F. J. Bonnalie and Mr. A. H. Brittan had been so meritorious and so equally balanced that the adjudicators could not do otherwise than give them each a medal; while the third, Mr. J. S. Allan, had run them so close that he was awarded a certificate of honour. In the systematic courses the prize-takers were—in dental anatomy and physiology, Mr. W. Gray. Owing to the closeness of the competition, a special prize was awarded to Mr. H. Brooke Dew. On the motion of Dr. Smith, seconded by Mr. Matthew Finlayson, the report was adopted. The Chairman, after presenting the prizes, congratulated the students on the profession they had chosen. The diagnosis in dentistry, he stated, was simple, the the treatment effectual—(laughter)—more so than in other branches of the profession. With reference to the school accommodation, which he stated was inadequate, he had no doubt that it would soon be remedied. He believed the school was unrivalled in every respect except accommodation.

PROSECUTION UNDER THE DENTAL ACT.

At the Worship-street Police-court, Aug., 15th, Mr. Huntley and Mr. Coe, who were summoned as of the American Dental Institute, 44, Finsbury-square, appeared to answer a charge of having, on the 27th July, taken and used the letters D.D.S., or some other name, title, or description, that they were registered under the Dentists Act, 1878, as specially qualified to practise dentistry, they not being registered under the said Act.

Mr. Melsheimer, barrister, supported the summonses, which by arrangement were taken together; and Mr. Waddy, Q.C., defended.

Mr. Melsheimer said that the prosecution was under the Act 41 and 42 Vict., and the prosecutors were the British Dental Association. The words of the Act, cap. 33, sec. 3, were followed in the summons, and the Amending Act added that no person should use any words or letters implying special qualification to practise dentistry without being registered. The American Dental Institute, added counsel, advertised as of St. James's-square, Finsbury-square, and Thurlow-square. In the pamphlet issued by the Institute the names of Dr. Huntley and Dr. Coe appeared, followed by the letters D.D.S., (Pennsylvania University) and D.D.S., (Boston College) respectively, but neither of those qualifications were recognised by the General Medica council which only recognised under the Act the degrees conferred by Harvard and Michigan Universities (U.S.A.). He (Mr. Melsheimer) would show that the "D.D.S." following the names of the defendants were intended to represent that they were registered and specially qualified. Mr. Thomas Smith, solicitors' clerk, said that he was employed by Messrs. Beaumont and Bouverie, solicitors to the British Dental Association. On the 27th of July he, acting under instructions, went to the American Dental Institute, 44, Finsbury square, where, in a waiting-room, his name and address were taken by a lady, who seemed to act as secretary. She handed him a pamphlet of the institute, on the inner first page of which the names of the defendants, amongst others, appeared. After that he was shown into the operating room. There he saw the defendant Huntley, whom he addressed, "Dr. Huntley, I presume?" The defendant answered "Yes," and witness then pointed out the name of Huntley, asking if it was his, and what the letters "D.D.S." meant. The defendant replied "They mean 'Doctor of Dental Surgery.'" Witness then asked if the pamphlet was issued with his (Huntley's) authority, and the defendant then wished to know why the questions were put, and witness told him that he was clerk to the solicitors of the British Dental Association and the object of his visit. Mr. Huntley then said that his name was published with the letters, with his consent. In a following conversation the defendant said that the principal of the institute was Dr. Clifford, who was registered, but that he (Huntley) knew that nearly all the others were not. He added that the British Dental Association could not touch them as they worked for Dr. Clifford. Witness afterwards saw the defendant Coe, whom he asked similar questions, and Mr. Coe said that the "D.D.S." meant "Doctor of Dental Surgery," and that the pamphlet with his name was issued with his consent.

Cross-examined: The witness said that he had been engaged in making inquiries in other cases of this kind, this being the fifth prosecution in which he had engaged. What he had done was under instructions from his employer, and not as a 'common informer."

Mr. Melsheimer put in the list of registered dentists to show that the defendants' names did not appear therein, and in re-examination, the witness said that the defendant Huntley said that, though he was qualified, every impediment was placed in the way of Americans practising in this country.

Mr. Waddy, for the defence, admitted that the defendants were not registered, but said they could not be, though duly qualified. He thought the Act a most mischievous one, and that the exclusion of such colleges as those from which the defendants received their diplomas was never intended to have the effect of preventing them practising as qualified persons in this country. If the General Medical Council would recognise that fact, there would be more sense than in their playing the part of the Three Tailors of Tooley-street. Mr. Waddy then proceeded to argue that the defendants had not offended against the legal intention of the Act by announcing themselves as "D.D.S." because that was not a recognised "special qualification," and he said that it would be as stupid to take it as meaning that as it would be to assume that a gentleman entitled to put D.D. after his name announced himself as a capable theologian, or that one writing M.A. (often a purely honorary degree) after his name was capable of editing a Greek play.

Mr. Bushby reserved his decision.

Subsequently Mr. Bushby delivered judgment. He said,—The question here is whether the defendants, by describing themselves as "Doctors of Dental Surgery," of Pennsylvania University and Boston College respectively, have used titles implying that they were registered under the Dentists' Act, 1878, or that they were specially qualified to practise dentistry. In either case, since they were not in fact registered, they would be liable under the 3rd section to a penalty of £20. The Act seeks to protect the public against quacks and knaves by the following among other provisions:—"Persons styling themselves dentists must be on the register, and are liable to be struck off for misconduct. Before being registered they must satisfy the General Registrar that they have proper certificates of competency, and only such foreign certificates are admissible for the purpose as are recognised in the list published by the general council." Now, certificates from Pennsylvania University and Boston College are not included in this list. I think, therefore, that the defendants cannot be said to have used titles which imply registration, and the only remaining point is whether the titles imply a special qualification to practise dentistry. It was urged for the defence that the words "specially qualified" must be restricted to recognized qualifications, such as "D.D.S. of Michigan," or "D.D.M. of Harvard." But this would got far to cripple the Act, for the only titles verbally specified in the 3rd section are "dentist" and "dental practitioner," and if persons by merely substituting such equivalents as "dental surgeon" or "doctor of dentistry" or as the defendants have done here—"doctor of dental surgery"—could escape, the protection to the public would be slight indeed. On the other hand, if the Legislature meant to enforce registration on everyone using a title which implied that he was specially qualified to practice dentistry in any way whatever, that person would come within the Act as effectually as if he styled himself a "dentist" or "dental practitioner." The latter seems to me the rational view, and I therefore convict the defendants. Mr. Waddy has dwelt on the hardships of their particular diplomas being unrecognized as titles to registration.. But before practising here I do not see why they should not have qualified by the means open to English dentists. Taking into consideration, however, that the clause might have been more clearly expressed and no question has been raised as to the genuineness of the diplomas assumed by the defendants I think it will be sufficient to impose in each case a fine of £5 and 2s. costs. The solicitor for the defendants intimated that he would give notice of appeal.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

IMPERFECTIONS OF ARTIFICIAL TEETH.

To the Editor of the "British Journal of Dental Science,"

Dear Sir,

I trust that the British Joural of Dental Science will also enable the many highly ingenious and artistic workers in the dental profession to concentrate some of their skill and judgment towards the result of effecting very considerable and needful improvements in the construction of modern artificial teeth; whilst acknowledging our indebtedness to our *first*-class dental manufacturing firms, I feel sure that as with instruments so also with teeth, if they are assured of the demand for a higher class of artificial teeth that they will endeavour to meet the wants of the profession and find it greatly to their benefit in the future to do so. Let me now ask of my fellow workers to take up at random say a few flat gum teeth, S. S. White's or other American makes. and notice specially the longer teeth such as laterals and canines. A watchmaker's or engraver's glass will enable us to examine the (should be) flat back surface against which we are to secure our work. We find that we have to deal with a glossy undulating surface with most likely some slight elevation round the pins, in many cases the surface might well represent a rolling sea in miniature; Let me ask some reader to furnish us with a micro-photo of such a tooth shewing the facts plainly. This inequality of surface must during the heating and subsequent cooling of the soldering process, practically strain the tooth considerably and tend to decrease the strength we endeavour to give to our work by the closest fitting. Again let me draw special attention to the faulty proportional design as to strength, in the present haphazard position of the two platina pins, these of the same diameter are made to do duty for the smallest areas of tooth surface that we can fit as also for the exceptionally long and wide teeth needful for the larger mouths of our more powerfully built patients. Let me ask in what watch, clock, microscope, camera, engine, mathematical or meteorological instruments or other scientifically designed pieces of mechanism, would such unscientific want of proportional parts be allowed to exist? As larger pins are probably not desirable we must have more pins distributed in the most advantageous positions for strength. What first-class worker can not recall cases of teeth being forced away because the pins were so low down and altogether inadequate to stand the enormous forward thrust and strain of strong and prominent lower canines or even incisors. Surely this can and should be remedied. We need metal anchorages into the porcelain in several parts of the back of the tooth, so that if through roots, or prominent bite of opposing teeth some of the pins have to be ground nearly or entirely out, others in desirable numbers and position may still give the requisite strength, again, the common pin lead is apt to cause the small portion of porcelain enclosing it to flake off in a small saucer-shaped piece. I wish to ask if a pin stamped at one end into 4 or 5 arms slightly turned up at an angle would not give a better result? or would the radical arms tend to produce cracks in the body of the tooth? In the event of 3 or 4 pins being used these arms would extend only to a very minute distance beyond diameter of wire used or a slight recess could be made behind the arms. I feel also that without adding greatly to the cost, the teeth might be rendered incomparably more valuable to us and our patients were they each taken in hand by a retoucher, so to speak, who with a few hand touches with different coloured enamels might make them really natural in appearance. We can but grumble at the unnatural evenness of glaze, tint and colour of the teeth as they are now produced and the sole consideration seems to be to make them dirt cheaply with scant attention to artistic finish; in many instances modern buttons at a few pence or so per doz. are more highly finished as to design and form than modern teeth. Having enquired years ago of Messrs. C. Ash and Sons, if they could not introduce some molars and bicuspids of a more natural form similar to those once obtainable under the name of "Rose's" molars, I was really very pleased to find at last such a pleasent change for the better had been effected, though to give best results the inner surfaces should present a roughly ribbed surface similar to that of a medium file. This would give strength and grip even to saddle back teeth which can often be used where the shouldered teeth are not so convenient. A correspondent in time past grumbled that no one had yet produced porcelain gums that could be swaged up to fit with a mallet or hammer ! ! I am sorry for him, and will not indulge in more extravagant wishes than that we may be furnished ere long with A 1. teeth and such free glazing enamels that we may be able to avail ourselves of *any* of the teeth in the market for continuous gum work. I shall look for practical discussion of these items and a useful result.

G. N. TINDUP.

TIN AND GOLD FILLINGS.

To the Editor of the "British Journal of Dental Science."

SIR,

Referring to the letters which have appeared in your Journal of the 1st August, from Mr. T. Fletcher and Mr. J. W. Lomax respecting the use of Tin Foil in conjunction with Gold, I remember on accepting an engagement as Surgery Assistant with Mr. T. R. English, of Colmore Row, Birmingham, in the year 1856 that he (Mr. English) informed me, he had used Tin Foil with Gold very extensively in the cavities of molar and bicuspid teeth with very satisfactory results for several years past, and he wished me to adopt the same course with his Patients. This will prove beyond a doubt that Mr. J. W. Lomax was *not* the only dental practioner who believed in the use of Tin Foil in conjunction with Gold as an efficacious stopping in the year 1853.

Yours, &c.,

Manchester. FRANK A. HUET, L.D.S.I.

VACANCIES.

Dental Hospital, Mount Pleasant, Liverpool. The post of House Surgeon is vacant. Applications on or before the 15th September to be made to the Dean.

Victoria Dental Hospital, Manchester. There is a vacancy in the Dental staff of the above hospital. Application to the Secretary.

ANSWERS TO CORRESPONDENTS.

VULCANITE.—It is not the first time that we have received complaints against this Dental Depot. We cannot of course meddle in the matter, for every one is entitled to conduct his business in his own fashion, and those who are to blame are the persons who submit to impertinences. You will find what you want in our advertisement columns.

ERRATUM.—Page 768 line 5 from bottom, for 020° read 200°.

British Journal of Dental Science.

No. 496. LONDON, SEPT. 15, 1888. Vol. XXXI.

A STATISTICAL ENQUIRY AS TO THE RESULTS OF THE IMMEDIATE TREATMENT OF PULPLESS AND ABSCESSED TEETH.*

By G. Cunningham, B.A., D.M.D. (Harv.), L.D.S. (Eng.)

Immediate treatment may be briefly defined as, that method by which the roots of pulpless or of abscessed teeth are treated and filled at one sitting, irrespective of previous conditions. The advocates of such a method admit that it is not in accordance with either recognised principles or established modes of practice. On the other hand, it will surely be admitted that a comparison of recent dental literature (and more especially as exemplified in the later text-books, such as the third edition of Tomes' "Dental Surgery," and the American "System of Dentistry"), with that which preceded it, conclusively proves that the immediate method, though possibly not described by that name, has been recognised as permissable and appropriate treatment in certain classes of pulpless or abscessed teeth. Nor can any one deny the fact that the great length of time necessarily required for the effectual treatment of such teeth by the ordinary methods is a tremendous obstacle to the demand for our professional services.

As the immediate filling of pulpless and abscessed teeth effects an enormous saving of time as compared with the various kinds of treatment generally adopted, which for convenience may be described under one head as the Dressing Method, any method, promising to possess such a time-and-labour-saving quality, merits the careful examination of such a scientific Society as ours. The storm of derision, and even of abuse, which has been let loose upon the advocates of this line of treatment by practitioners of otherwise good repute, in the pages of current dental literature, and in the proceedings of Dental Societies, will most surely recoil upon themselves. It is hoped, however, that a consideration of the statistics now to be presented will convince you that immediate root-filling is neither "unscientific," nor is it entitled to be characterised as "the latest craze." Indeed the immediate method is no such new or untried thing as it is so often asserted. Mr. Coleman's communication at the British Dental Association Meeting in 1882 advocated immediate treatment, though not immediate root-filling, as commendable practice; and I gratefully acknowledge my indebtedness to this communication, with its valuable, though too meagre, statements as to the results of the method there recommended, since after a short experience it led me to adopt that modification of it which has gradually, and I earnestly believe permanently, supplanted my employment of the dressing method.

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* A paper read before the Odontological Society of Great Britain.

In 1886, in a discussion of a paper on abscessed teeth, at the British Dental Association, immediate root-filling was strongly advocated, both by my brother and myself: but, for some reason or another, the remarks were not deemed of sufficient importance for embodiment in the Transactions.

As far as I can ascertain, Professor Hesse, of the Leipzig University Dental Institute, is entitled to the credit of being the first to publicly advocate immediate root-filling as a general practice. In 1884 he published an article on the filling of root canals in the "Deutschen Monatsschrift für Zahnheilkunde," in which, after a description of the stages of the operation, he states that such an immediate method yielded better results than the dressing method which he had previously employed, entailing as the latter did many visits during days and weeks of treatment. He advocated it not only as effecting a great saving of time, but also as leading to more certain results. His communication shows that of fifty-eight teeth, of which the roots had been treated during the then two previous years by this method, it had only been necessary to extract one tooth. In those cases where there was a copious discharge of pus, he filled the root with iodoform and temporarily closed it; and after subsidence of the discharge, which usually occurred in rarely over four days, he inserted the permanent filling. In a recent letter Professor Hesse remarks that, after a perusal of my commnnication* on this subject to the International Medical Congress, that our experiences as to the success of immediate root-filling are in complete accord. He also specially endorses the fifth conclusion in that paper, viz., "That method, rather than medicine, had a great deal to do with results, and that probably the operation would have succeeded equally well in a very large number of cases without any medicine whatever."

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* "On the Curability of Pulpless and Abscessed Teeth. (*The Dental Record*, Vol. VIII, No. 1, January, 1888.)

Writers on immediate treatment are, like those on the dressing method, divided into two distinct classes, viz., those who advocate the use of the nerve drill, and those who argue that the root canals should never be bored or reamed with a view to their enlargement. Therefore it would appear that the reaming out of the canals is not absolutely essential to the success of the method. While, on the one hand, it must be admitted that the use of the nerve drill is attended with a certain amount of danger; even in the hands of the most careful operator, I do contend that it affords the most effectual and most rapid means at our command for altering or modifying those diseased conditions which affect the health and cure of pulpless and abscessed teeth.

For the convenience of those who prefer the slower, and possibly less dangerous method, I quote the description of that employed by Dr. Ottofy, of Chicago, who is one of the most able and ardent advocates of immediate treatment on the other side of the Atlantic :—

"Any tooth is a proper one for the operation, but free access to all roots should first be obtained, for thorough cleanliness and dryness are all-important factors. The rubber dam should be adjusted, the *debris* entirely removed from the cavity before any attempt is made to enter the pulp-chamber, and the root canals, once opened, should never be bored or reamed, nor should any attempt be made to enlarge them; but instead, a good supply of very fine piano-wire instruments should be provided. The first step consists in saturating the entire tooth and cavity with a solution of bichloride of mercury, one part to one thousand of water; then follows the thorough cleaning of the canals with cotton wound on broaches and dipped in chloroform or ether, the object being to dissolve and remove the fats and foreign substances by the aid of these volatile agents. Only very few hairs of cotton should be used, thus preventing a pumping or forcing action toward the end of the root.

"These washings should be continued assiduously until neither odour nor colour is perceptible. However, in roots where the apex is very large (a fact readily determined by the experienced), the cotton receives a slight yellowish tinge, which does not cease, and is no bar in those cases to proceeding with the treatment.

"After thorough cleaning, a solution of bi-chloride of mercury, 1 part to 250 parts of water, is introduced into the root, but not forced beyond the apex. This having been allowed to remain two or three minutes, is completely removed, and a weaker solution, namely, one part of the bichloride of mercury in one thousand parts of water, is forced into the root and beyond the apex. After a conscientious application of this powerful germicide, the root canal is thoroughly dried, and peroxide of hydrogen is allowed to take its place, which, also, should be pumped with a piston-shaped piece of cotton into every available space with the root and beyond it. If any pus is present, and its presence is indicated by the peroxide of hydrogen, the bichloride of mercury, one in one thousand of water, should again be used ; but if no pus is present its use may be dispensed with. The root canals are now carefully dried with hot air, and are then again medicated by winding cotton on a broach, moistening it with eucalyptol, and dipping it into iodoform ; this is forced into the roots very thoroughly and conscientiously. While in this condition the gutta-percha dissolved in chloroform is introduced, in the usual manner. Instead of the gutta-percha cones, I have been in the habit of making cones of oxyphosphate of zinc, and forcing them into the canals in a semi-hardened condition (either may be used) ; and acting as a piston, the soft gutta-percha should be forced by the cone, thoroughly driving it into every space, irrespective of the fact of its passing the apex of the root.

"A filling of gold (if not too large a cavity) may be immediately proceeded with. Any of the plastics may, almost invariably, be introduced at once."*

(To be Continued)

A **USEFUL ANTISEPTIC**—The following is a good antiseptic dressing :—

℞	Bichloride of mercury	gr. iv
	Hydrate of chloral	ʒiv
	Chloride of ammonia	℈ij
	Distilled water	Ov

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* "The Immediate Filling of Pulpless Teeth." Read before the Odontological Society of Chicago. (*Dental Advertiser*, January, 1888).

British Journal of Dental Science.

LONDON, SEPTEMBER 15th, 1888.

HOW TO GET QUALIFIED.

First of all, it may be well to enquire who are the people who will make dentists and successful practitioners. Usually a boy when he has reached 15 or 16 shows pretty plainly of what stuff he is made, so that a father or guardian can form a pretty shrewd guess as to whether or no a boy is likely to fall upon his feet throughout life or become a chronic ne'er-do-well. A dentist's calling involves long hours, great strain upon the eyesight, prolonged standing, much patience, a genial regard for the frailty of human nature in the matter of temper and what Bret Harte calls "cussedness." A boy of delicate physique, unable to stand patiently for hours is useless. Taken at its best the life of the average dentist is an arduous and toilsome one. Assuming good health and plenty of power of self-control, it is further requisite that there should be a certain degree of adaptability, both manual and mental, as well as dexterity and sensitiveness of touch. The ideal dentist will combine the deftness of a skilled mechanic with the eye of a portrait-painter ; his wrist should like a Nasmyth's hammer, be capable of the greatest strength with the most delicate manipulation. A great many men become dentists, and although probably most of them aim at London practice, few attain this, or even lucrative practice. The reason of such a large proportion failing is due either to the initial unfitness of the individual for the calling ; the neglect of practice during his student days ; or the absolute lack of knowledge of his patients. It is one thing to know your profession, it is quite another to make others believe that you know it. Having decided to make Dentistry his profession, the boy has to pass some preliminary examination in general education. We give a complete list of these in our Supplement, together with the subjects which they embrace. When possible, the choice of examination should be made in favour of the Matriculation of the University of London, as this not only demands a fair attainment of general education, but includes chemistry and physics, which will prove most valuable to the student in after life, besides opening the way to the obtaining a university degree, if his after career gives evidence of sufficient ability and taste for such an undertaking. Having passed the preliminary examination, the student registers his name as a dental student at the local office of the General Medical Council. The next step is to apprentice him for three years to a dentist, during which time he acquires an insight into mechanical dentistry. The importance of these three years to the student cannot be over estimated, the time is a bare sufficiency to acquire one at least of the most important branches of the dentists professsional studies. Candidates may, however, pass eighteen months of the three years' instruction in Mechanical Dentistry *before* the date of their Registration as Students ; but four years must be given subsequent to the date of passing the Preliminary Examination. During this time much general information may be picked up ; or, if the student proposes to take the diploma of the Conjoint Examining Board of the Royal Colleges of Physicians and Surgeons ; the preliminary examinations in Chemistry, Materia Medica, Osteology and Physiology may be passed. Still, too much time ought not to be taken from his bench work. After the completion of the three years instruction in mechanical work, lectures at a general hospital have to be attended for at least two winters and one summer session, making a total of eighteen months. The purely special instruction given at a recognised dental hospital, may be carried on concurrently with the work at the general hospital ; but must extend voer a period of two years.

Provided the courses of study given above have been duly completed the student may present himself for the examination for the Licentiateship of the Royal College of Surgeons, &c., after the end of the fourth year subsequent to Registration. Unless the student has friends in the town in which he is studying it is highly advisable that he should reside with some professional man who will look after his studies and general welfare. Taking this precaution often saves a great deal of sorrow, loss, and waste of time, as only too frequently an inexperienced lad, perhaps devoid of wilful viciousness gets into a bad set and squanders alike his money, his time, and his health. Another important caution should be borne in mind. When it is sought to apprentice a boy, too much care cannot be expended upon the choice of *locale* and of dentist. Many first-rate men who take apprentices regard the three years of mechanical instruction as merely nominal, and permit the attendance of the apprentices to be perfunctory. This is wrong ; let the lad be sent to someone who will faithfully keep him to his bench, and see that he acquires that knowledge and skill for which he pays, and who will take a pride in turning him out at the expiration of his articles well informed and expert in the mechanical side of his profession.

DEATH FROM ALVEOLAR HÆMORRHAGE.—Thomas Dinigan, an American, died in the Presbyterian hospital, New York, of a hæmorrhage from the socket of a tooth which he had had extracted. Blood began to flow as soon as the tooth was drawn, and efforts to arrest the hæmorrhage were unsuccessful. After many vain attempts to stop the flow the man was taken in an ambulance to the hospital, where he died soon after admittance.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

TEETH REGULATORS.

By Dr. S. J. Shaw, Boston, Mass.

For drawing outward an erratic incisor, a cross-bar, a screw with nut, and a loop or band form an effective combination. In application, however, the bar is apt to turn from the horizontal line, and to prevent this, solder to a face-plate the screw and a parallel guide-pin, which with the screw passes through the bar and keeps it at right angles to the face-plate. This plate is attached to the tooth with waxed floss silk, and the fixture is thus made to serve for every such case that may be presented. For a retaining fixture, simply solder a bar to a face-plate and tie it on with floss silk. The regulation of complicated cases may be accomplished by a system of pivoted levers operated by jack-screws. The lower bicuspids must be moved outward before the cuspids can be brought in. For that purpose it is recommended to make a vulcanite plate fitting over the bicuspids and molars. With a narrow, fine saw, cut sections from the plate of forms such as could pivot at points behind the molars, and insert two jack-screws opposite the first bicuspids. In another instance, in which for improved occlusion it was desirable to push outward the left superior bicuspids, the pivot was placed opposite the cuspid, and a metal screw-arm built into the plate opposite the molar. It is apparent that successive turnings of the screw would swing the lever outward and carry the bicuspids into place. An occasional case is presented wherein it is necessary to pull one tooth inward, and push an adjoining tooth outward. The inferior right second bicuspid and first molar for example. For this case the lever section was pivoted opposite the second molar, and embraced the first molar, from the plate in front of which a metal screw-arm extended so that the screw would impinge upon the face of the bicuspid. The turning of the screw pushed the bicuspid inward and the molar outward, by a peculiarly complex action of the members of the apparatus,—which, however, made the two teeth serve as abutments each for the other, while being pushed in opposite directions into place. A case is described in which the superior left central incisor required partial rotation, the lateral and both bicuspids an outward displacement, and the cuspid to be pushed inward. All these movements can be simultaneously effected by the compound pivoted levers and screw-arm. The turning of the screw against the neck of the cuspid will result in pushing it, and bringing the four other teeth into symmetrical alignment at one and the same time. The wax model for the vulcanite plate should be judiciously thickened where the pivot and jack-screw are to be placed.

Dental News.

THE CASE OF MR. PARTRIDGE.

Mr. Henry Francois Partridge, of 76, Sterndale-road, Shepherd's-bush, appeared to summonses before Mr. d'Eyncourt at Westminster Police-court charging him with using at his business address, 43, Sussex-place, Old Brompton-road, the name and title of dentist, and the letters L.D.S. (Licentiate of Dental Surgery), thereby implying that he was registered under the Dentists' Act of 1878. Mr. R. E. Melsheimer was council for the prosecution, and Mr. George Elliot for the defence. There was really no dispute about the facts of the case. Mr. Partridge is the proprietor and originator of the South Kensington Ladies' Dental Association, and he held a diploma from the Royal College of Surgeons, Ireland, as licentiate of dental surgery. He took to advertising, and the College of Surgeons, considering this unprofessional, cancelled his diploma, with the result that the General Medical Council of England withdrew his name from the Medical Register.

Mr. Partridge applied for and obtained a mandamus against the Medical Council to compel them to restore his name to the Register, and this was decided in his favour. The council appealed, but the decision of Mr. Justice Mathew was upheld.

In giving judgment in the appeal case, Lord Esher said that, although he had decided in favour of Mr. Partridge, the Medical authorities could deal with him for disgraceful conduct, the word "disgraceful" being, of course, understood n the sense of "unprofessional" dealings. The suggestion made was acted upon, notices in regular form given to Mr. Partridge, and last year he was removed from the Register. Since that time he has made no alteration in his style of qualification and address.

Mr. Elliott, on behalf of Mr. Partridge, said directly the institution he started became a success he had to contend with imitators. In consequence, Mr. Partridge felt compelled to give public notice that he was the founder of the association. There had only been a technical infringement of the Act, because the action of the General Medical Council made no difference to defendant's capacity as a dentist. His skill remained with him, although his diploma had been taken away, and it was a very different case to that of an ignorant man who professed qualifications he never possessed, with a view to trap the unwary.

Mr. d'Eyncourt fined Mr. Partridge £5 and three guineas costs.

DISPUTE BETWEEN A TRAVELLER AND HIS EMPLOYERS.

At the County Court,—before his Honour Judge Jordan—John Moore, commercial traveller, sued Messrs. Jones and Smallwood, dentists, Hanley, for the sum of £50, damages for wrongful dismissal, arrears of wages, and commission due. Mr. Byrne (Manchester), who was instructed by Mr. R. Sherratt, appeared for the plaintiff; and Mr. E. A. Paine represented the defendants.—On behalf of the plaintiff it was stated that on the 11th November, 1886, he was engaged as traveller by the defendants, under an agreement which provided that the employment should last for two years certain, and the salary should be £150 per annum, with a commission of 2½ per cent. upon all moneys collected, and an allowance of one guinea per day for expenses every working day he was actually employed away from Hanley. The agreement also contained a clause to the effect that at the expiration of the first year either party should be at liberty to determine the engagement by giving a month's notice. On the 30th May last the plaintiff received from the defendants a notice in writing to leave their employ at the end of a month. It was contended for the plaintiff that as the agreement provided expressly for an engagement for two years this clause was inconsistent with that which made provision for terminating the engagement after the lapse of one year should either party desire it, and by a well-known rule of construction, where there were two inconsistent clauses the second must go. In this case the second clause was the one relating to terminating the engagement at the end of a year.—His Honour considered that the two clauses were perfectly consistent. The agreement simply supposed that during the first year neither party could determine the engagement at all, but either of them might do so after the lapse of the first twelve months by giving a month's notice. If neither party gave notice then the engagement continued in force for two years.—Mr. Byrne said that upon his honour's ruling the claim for wrongful dismissal must fall to the ground. During the month that the plaintiff was under notice he was not allowed to travel, and for this he claimed commission to the extent of £4, which was about the average amount he made per month. The plaintiff also claimed the allowance of a guinea per day for expenses on Sundays when he had been detained on his journeys ; and he further claimed for moneys expended in treating Scotch customers to whisky, &c., and which it was alleged that one of the defendants had authorised him to expend, and promised to see refunded.—His Honour said that under the agreement the plaintiff could not sustain the claim for a guinea per day expenses for Sunday, which was not a working day. The only question he had to deal with was the one of commission. The amount claimed might be earned if the plaintiff had been travelling and had collected moneys, but as he was not away from Hanley during the month, and did not collect any money, he could not be entitled to any commission. Without calling upon the defendants his Honour said that the plaintiff had failed upon every ground of claim, and he gave judgement for the defendants with costs.—[The name of "Smallwood" does not appear upon the Dentists' Register for 1888.—Ed. B. J. D. S.]

VACANCY.

Dental Hospital of London and London School of Dental Surgery, Leicester Square. The post of Lecturer on Dental Surgery and Pathology is vacant. Applications to Morton Smale, Esq., Dean.

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from Aug. 1st to Aug. 31st, 1888:—

Number of patients attended		
Extractions	Children under 14	525
	Adults	1149
	Under Nitrous Oxide	807
Gold Stoppings		95
Other Stoppings		358
Advice		176
Irregularities of the Teeth		42
Miscellaneous and Dressings		182
Total		3334

Geo. Seymour, *House Surgeon*.

Work done at the Victoria Dental Hospital of Manchester during the month of July, 1888:—

Number of Patients attended		1203
Extractions	Children under 14	785
	Adults	
	Under Nitrous Oxide	95
Gold Stoppings		106
Other Stoppings		196
Miscellaneous		404
Total		1586

Charles H. Smale, L.D.S., Eng., *House Surgeon*.

ANSWERS TO CORRESPONDENTS.

Mr. J. Furber.—Your communication has been duly received, and will receive attention.

BOOKS AND JOURNALS RECEIVED—

On Nitrous Oxide, By Dr. Silk; Messrs. A. & Co. Churchill, London; Transactions of the Odontological Society; Dental Cosmos; Chemist and Druggist; Dental Record; Pharmaceutical Journal; Medical Bulliton; Archives of Dentistry; British Medical Journal; Southern Journal Dental Science; The Dental Register; L'Art Dentaire; L'Odontogique; Revue Odontologique; Monattschriff f. Zahnheilkunde; Dental Reform; Independent Practitioner; Ohio State Journal of Dental Science; Western Dental Journal; Items of Interest.

British Journal of Dental Science.

DENTAL STUDENTS' SUPPLEMENT.

SEPTEMBER 15, 1888.

1.—THE LICENSING CORPORATIONS.

Comparative Summary of Regulations for the License in Dental Surgery.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons Glasgow.
1—PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July 22nd, 1878.	Compulsory on all who commenced their Professional Education after August 1st, 1878.	Compulsory on all, except those who have passed one equivalent examination.	Compulsory on all who commenced the Professional Education after August 1st, 1878.
2—AGE at which the Candidate may present himself	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.	Twenty-one.
3—DURATION OF PROFESSIONAL EDUCATION	Four years.	Four years.	Four years.	Four years.
4—COURSES OF LECTURES, &c., to be attended at a recognised School:				
Anatomy	Two Courses, or one Course and twenty Lectures on Head and Neck.	One Winter Course.	One Course.	Two Courses, or one Course and twenty Lectures on Head and Neck.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons Glasgow.
4—COURSES OF LECTURES, &c., (*continued*)—				
Physiology	One Course.	One Course of 50 Lectures.	One Course.	One Six months' Course.
Surgery	Ditto.	One Winter Course.	Ditto.	Ditto.
Medicine........................	Ditto.	Ditto.	None.	Ditto.
Chemistry	Ditto.	Ditto.	One Course.	Ditto.
Materia Medica	Ditto.	One three months' Course.	Ditto.	One three months' Course.
Dissections and Demonstrations, or	Nine months.	Nine months.	Two Courses.	Nine months.
Dissections and Anatomy of Head and Neck.........		Nine months. One Course of 20 Lectures.		One Course.
Practical Chemistry and Metallurgy	One Course of each.	One three months' Course.	One Course.	Three months. Twelve Lectures.
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	One six months' Course, or two three months' Courses.	Two Winter Sessions.	Twenty-four Lectures.
Dental Anatomy and Physiology	Two Courses.	One Course.	None.	Twenty Lectures.
Dental Surgery	Ditto.	Ditto.	Two Courses.	Twelve Lectures on Demonstrations.
Dental Mechanics	Ditto.	Ditto.		
Practical Instruction in Mechanical Dentistry ...	Three years under a competent Practitioner.	Three years under a Registered Dental Practitioner.	Three years under a Registered Dental Licentiate.	Three years under a Registered Practitioner.
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recognised General Hospital...	Two years.	Two years.	Nine months.	Two years.
5—FEE	£10 10s. over and above stamp duty.	£10 10s.	£10 10s.	£10 10s.
6—LEAST period during which unsuccessful Candidates are referred to their studies	Six months, subject to the decision of the Board.	Three months,	Six months.	Three months.

7—PARTICULARS OF EXAMINATION	(A) *Written*: On General Anatomy and Physiology. General Pathology and Surgery (both with especial reference to Dental Practice.) (B) *Oral*: On all subjects in the Curriculum. Preparations, Casts, and Drawings. Fillings. Cases for Diagnosis, instruments, &c.	*Written and Oral*: First Part—Anatomy, Physiology, Chemistry, and Metallurgy. Second Part — Surgery, Medicine, Materia Medica, and Special Dental subjects.	*Written and Oral*: On all the subjects of the Curriculum. Preparations, Microscopes, and other appliances.	*Written, Oral, & Practical*: 1st Part-Anatomy, Physiology, Chemistry, and Metallurgy. Second Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files, and Plugging instruments.
8—DATE OF EXAMINATION.	May and November.	First Part—1888. ,, Tuesday, October 16 1889 ,, January 22. ,, ,, April 16. ,, ,, July 23. Second Part — Following Thursday.	October and November.	1888—October 9—11. 1889—January 15—17. ,, April 4—6. ,, July 16—18.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS *sine curriculo*: (*a*) Conditions of eligibility.	Candidates must have been in Practice or have commenced Professional Education prior to September, 1859 (the date of the Dental Charter.)	Candidates must have been in Practice, before August 1st, 1878. or apprenticed before August 1st, 1875.	Candidates must be registered Dental Practitioners in practice, before 1878.	Certificates must be registered Dental Practitioners in Practice before August 1878. No application considered unless received prior to 1st. January, 1889.
(*b*) Certificates, &c., required.	One of moral character signed by two members of the College or two Licentiates of the Licensing Bodies in the country where the education was received.	One of moral and professional character signed by two Registered Medical Practitioners.	Certificates of moral and professional character signed by two Registered Medical Practitioners and by two Registered Dentists.	Candidates of moral and professional character signed by two Registered Medical Practitioners. Also, declaration by the Candidate that he does not advertise.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons Glasgow.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATIONS—(*contd.*): (*b*) Certificates, &c., required (*continued*):	Name. Age. Professional address. Date of commencing Dental practice.	Name in full. Age. Address. Date of commencing Dental practice or apprenticeship, and whether if in practice in connection with any other and what business.	Name. Age. Address. Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.	Name. Age. Address. Apprenticed how long, and to whom.
	Whether a Member, Licentiate or Graduate of any British College of Physicians, College of Surgeons, or University, with date of licence. &c. Of what learned societies a Member.	Whether in possession of Degree or Diploma in Medicine or Surgery; if so what, and date.	Professional status.	Professional status.
	Whether in Dental practice separately, or if not, in connection with what business. Whether he has employed Advertisements or Public Notice.	Whether practising Dentistry in conjunction with any other business, and if so, what.		
	Particulars of Professional Education.	Particulars of Professional Education.	Particulars of Professional Education.	Particulars of Professional Education.
(*c*) Manner of Examination	Same as ordinary Examination.	Same as ordinary Examination.		Same as ordinary Examination
Fee	Ten guineas over and above stamp duty.	£10 10s.	£21.	£10 10s.
For further information apply to Secretary.	MR. F. G. HALLETT, Examination Hall, Victoria Embankment, London, W.C.	JAMES ROBERTSON, Solicitor, Interim Secretary and Treasurer, 1, George Square, Edinburgh.	A. H. JACOB, Esq., Royal College of Surgeons, Dublin.	ALEX. DUNCAN, Esq., Faculty of Physicians and Surgeons, Glasgow.

II.—PRELIMINARY EXAMINATION.

REGULATIONS OF GENERAL MEDICAL COUNCIL.

No person shall be allowed to be registered as a Medical or Dental Student unless he shall have previously passed at one or more examinations a Preliminary education in the subjects of General Education as specified in the following list:—

1. English Language, including Grammar and Composition.
2. Latin, including Translation from the specified author and translation of easy passages not taken from such authors.
3. Elements of Mathematics, comprising (*a*) Arithmetic, including Vulgar and Decimal Fractions; (*b*) Algebra, including simple Equations; (*c*) Geometry, including the first Book of Euclid, or the subject thereof.
4. Elementary Mechanics of Solids and Fluids, comprising the elements of Statics, Dynamics, and Hydrostatics.***
5. One of the following Optional Subjects:—
   (*a*) Greek; (*b*) French; (*c*) German; (*d*) Italian; (*e*) any other Modern Language; (*f*) Logic; (*g*) Botany; (*h*) Elementary Chemistry.

List of Examining Bodies whose Examinations fufil the Medical Council as regards preliminary education:—

1. UNIVERSITIES IN THE UNITED KINGDOM.

UNIVERSITY OF OXFORD:—

1. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects:—
   Greek, French, German, Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.
2. Senior Local Examinations; Certificate to include Latin and Mathematics.
3. Responsions.
4. Moderations.
5. Examination for a Degree in Arts.

UNIVERSITY OF CAMBRIDGE:—

6. Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects:—
   Greek, French, German.
7. Senior Local Examinations; Certificate to include Latin and Mathematics.
8. Higher Local Examinations.
9. Previous Examination.
10. Examination for a Degree in Arts.

⁂ In the case of Students in Universities with a prolonged curriculum, where the Examination in Mechanics required for their Degree is taken at a more advanced period of study than before commencing Medical Education, registration can be effected only on having passed the Examination in Mechanics, but their registration may be then antedated to the period at which the Preliminary was passed.

UNIVERSITY OF DURHAM :—

11. Examination for Certificate of Proficiency.
12. Examination for Students at the end of their first year.
13. Examination for a Degree in Arts.

UNIVERSITY OF LONDON :—

14. Matriculation Examination.
15. Preliminary Scientific (M B.) Examination.
16. Examination for a Degree in Arts or Science.

VICTORIA UNIVERSITY :—

17. Preliminary Examination; Latin to be one of the subjects.
18. Entrance Examination in Arts, to include all the subjects required.

UNIVERSITY OF EDINBURGH :—

19. Local Examinations (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
    Greek, French, German.
20. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects :—
    Greek, French, German.
21. Preliminary Examination for graduation in Science or Medicine and Surgery.
22. Examination for a Degree in Arts.

UNIVERSITY OF ABERDEEN :—

23. Local Examinations (Junior Certificate); Certificate to include all the subjects required.
24. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin and also one of the following optional subjects :—
    Greek, French, German.
25. Preliminary Examination for graduation in Medicine or Surgery.
26. Examination for a Degree in Arts.

UNIVERSITY OF GLASGOW :—

27. Local Examinations (Junior Certificate); Certificate to include all the subjects required.
28. Local Examination (Senior Certicate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following subjects :—
    Greek, French, German.
29. Preliminary Examination for Graduation in Medicine or Surgery.
30. Examination for a Degree in Arts.

UNIVERSITY OF ST. ANDREW'S :—

31. Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin and also one of the following optional subjects :—
    Greek, French, German.
32. Local Examinations (Junior Certificate), to include all the subjects required.
33. Preliminary Examination for Graduation in Medicine or Surgery.
34. Examination for a Degree in Arts.

University of Dublin:—

35. Public Entrance Examination.
36. General Examination at end of Senior Freshman year.
37. Examination for a Degree in Arts.

Queen's University in Ireland:—

38. Local Examination for Men and Women; Certificates to include all the subjects required by the General Medical Council.
39. Entrance or Matriculation Examination.
40. Previous Examination for B.A. Degree.
41. Examination for a Degree in Arts.

Royal University of Ireland:—

42. Matriculation Examination.

II.—OTHER BODIES NAMED IN SCHEDULE (A) TO THE "MEDICAL ACT."

Apothecaries' Society of London:—

43. Examination of Arts.

Royal College of Physicians and Surgeons of Edinburgh:—

44. Preliminary (combined) Examination in General Education.

Faculty of Physicians and Surgeons of Glasgow:—

45. Preliminary Examination in General Education.]

Royal College of Surgeons in Ireland:—

46. Preliminary Examination; Certificate to include Mathematics.

Apothecaries' Hall of Ireland:—

47. Preliminary Examination in General Education.

III.—EXAMINING BODIES IN THE UNITED KINGDOM NOT INCLUDED IN SCHEDULE (A) TO THE "MEDICAL ACT" (1858).

College of Preceptors:—

48. Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and either a modern Language, or Greek, or Chemistry, or Botany, or Zoology, having been taken.

Examiners for Commissions and Appointments in Her Majesty's Service, Military, Naval, and Civil:—

49. Certificate to include all subjects required.

Intermediate Education Board of Ireland:—

50.	Junior Grade Examination	Cetrificates in each case include all the subjects repuired.
51.	Middle ,, ,, ,, ...	
52.	Senior ,, ,, ,, ...	

IV.—CERTAIN EXAMINATIONS OF INDIAN, COLONIAL AND FOREIGN UNIVERSITIES AND COLLEGES.

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[*] The *English* is provided for by the following *Resolution*, passed by the Executive Committee on October 27th, 1876 (*Minutes*, Vol. XIII., p. 358)—

"That as every candidate for the Certificate of the Oxford and Cambridge Schools' Examination Board is required to answer questions in such a manner as to satisfy the Examiners that he has an adequate knowledge of English Grammar and Orthography: this shall be held as conforming to the requirements of the Medical Council in reference to English Language."

III.—EDUCATIONAL BODIES.

LONDON.

DENTAL HOSPITAL OF LONDON, AND LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

HOSPITAL STAFF.

Consulting Physician—Sir J. Risden Bennett, M.D., LL.D., F.R.S.
Consulting Surgeon—Christopher Heath, F.R.C.S.

Consulting Dental Surgeons.

Samuel Cartwright, F.R.C.S., L.D.S. Sir John Tomes, F.R.S. F.R.C.S., L.D.S.

Dental Surgeons.

9 a.m.—Monday ... David Hepburn, L.D.S.
,, Tuesday ... R. H. Woodhouse, M.R.C.S., L.D S.
,, Wednesday George Gregson, M.R C.S., L D.S.
,, Thursday ... Storer Bennett, L.R.C.P., F.R.C.S., L.D.S.
,, Friday ... Claude Rogers, M.R C.S., L.D.S., D.M.D., Harvard.
,, Saturday ... F. Canton, L.R.C.P., M.R.C.P., L.D.S.

Assistant Dental Surgeons.

,, Monday ... Leonard Matheson, L.D.S.
,, Tuesday ... W. Hern, M.R C.S., L.D.S.
,, Wednesday E. Lloyd Williams, L.R.C.P., M.R.C.S., L.D.S.
,, Thursday ... Geo. Parkinson, M.R.C.S., L.D.S.
,, Friday ... Lawrence Read, L.D.S.
,, Saturday ... C. E. Truman, M.A., M.R.C.S., L.D.S.

Administrators of Anæsthetics.

9.30 a.m.—Monday... Dudley W. Buxton, M.D., B.S., M.R.C.P.
,, Tuesday... ... ... Frederic Hewitt, M.D.
,, Wednesday ... ... J. Mills, M.R.C.S.
,, Thursday ... ... F. Woodhouse Braine, F.R.C.S.
,, Friday ... ... T. Bird, M.A., M.R.C.S.
,, Saturday... ... ... G. H. Bailey, M.R.C.S.

Demonstrators.

Chas. F. Rilot, L.D.S.
E. Latchmore, L.D.S.

Medical Tutor—W. Paterson, F.R.C.S., L.D.S.
House Surgeon—G. Seymour, L D.S.

Assistant House Surgeons.

Arthur R. Colyer, F. A. Harsant, Thos. Constant.

Demonstrations.—The Medical Officers will make every effort to give Demonstrations on cases selected from time to time, every morning during the Lecture Season; and at the end of the Course those gentlemen who have attended the Demonstrations to the satisfaction of the Medical Officers will be permitted to perform operations at the Hospital under the supervision of the Medical Officers and the House Surgeon.

Dresserships for Cases of Extractions.—The appointments are held for two months, and consist of six Senior Dresserships for extractions under anæsthetics, and eighteen Junior Dresserships for ordinary extractions.

The Senior Dressers will be selected from those pupils only who have entered fully both to the practice and lectures of this Hospital, and also to the Course required by the College of Surgeons for the Licence in Dental Surgery at one of the General Hospitals.

MEDICAL SCHOOL.

The WINTER SESSIONS will commence on Oct. 1st. 1888.

The SUMMER SESSION will commence in May, 1889.

LECTURES.

Dental Surgery and Pathology,
Dental Anatomy and Pathology (*Human and Comparative*), by ARTHUR UNDERWOOD, M.R.C.S., L.D.S.

MEDICAL TUTOR.

The Medical Tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations. His classes are open to all Students, and are intended to assist those who are preparing for their examinations at the College of Surgeons; generally speaking, to guide and direct the studies of the pupils, and prepare them in the subjects for the Examinations.

FEES.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one Course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £40 to £50.

PRIZES.

The Prize-day will in future be held in July.

1. Prizes are awarded by the Lecturers for the best examinations in the subjects of their respective courses, at the end of the Summer and Winter Sessions.

2. Arrangements have been made for a prize in Operative Dentistry, in the competition for which each candidate is entrusted with the care of a mouth, which he shall, if not impracticable, set thoroughly in order.

3. A prize of the value of five guineas is also given by Messrs. Ash and Sons for the best essay on a surgical subject connected with the mouth.

4. A scholarship of the value of £20 has been founded by Sir Edwin Saunders, and will be awarded to the Student who has obtained the largest number of First Class Prizes during the Winter and Summer Sessions preceding the July in which the award takes place.

Note.—The Medical Committee have resolved "that the holder of the Saunders Scholarship be admitted without additional fee to the extra year of Hospital practice."

The Dean requests that all communications relating to the Medical School may be addressed to him at the Hospital, where he will attend in the afternoons, from Sept. 26th to Oct. 1st, inclusive, from 5 till 5.30 o'clock, or on Wednesday mornings from 10.30 till 12.

MORTON SMALE, M.R.C.S., L.D.S., L.S.A., *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE, GREAT PORTLAND STREET, W.

HOSPITAL STAFF.

Consulting Physicians.

B. W. Richardson, M.A., M.D., F.R.S.
W. H. Broadbent, M.D., F.R.C.P.

Consulting Surgeons.

Sir Spencer Wells, Bart., F.R.C.S. Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.

Sir Edwin Saunders, F.R.C.S.

Dental Surgeons.

Monday	F. Henri Weiss, L.D.S., Eng.
Tuesday	Alfred Smith, L.D.S., Eng.
Wednesday ...	G. A. Williams, L.D.S., Eng.
Thursday ...	A. F. Canton, L.D.S., Eng.
Friday	Thomas Gaddes, L.D.S., Eng. & Edin.
Saturday ...	Harry Rose, L.D.S., Eng.

Assistant Dental Surgeons.

Monday	Willoughby Weiss, L.D.S., Eng.
Tuesday	R. Denison Pedley, F.R.C.S. Edin.; M.R.C.S., L.D.S., Eng.
Wednesday ...	Marcus Davis, L.D.S., Eng.
Thursday ...	H. G. Read, L.R.C.S., M.R.C.S., L.D.S., Eng.
Friday	C. W. Glassington, M.R.C.S., L.D.S., Edin.
Saturday ...	W. R. Humby, L.D.S., Eng.

House Surgeon—F. Lankester, F.R.C.P., M.R.C.S., L.D.S., Eng.
Assistant House Surgeon—Arthur Fogg.
Assistant Demonstrator—W. Rushton.

Anæsthetists.

Henry Davis, M.R.C.S., L.S.A.
James Maughan, M.D., L.R.C.P., M.R.C.S.
J. F. W. Silk, M.D., Lond., &c.
P. Sidney Spokes, M.R.C.S., L.D.S., Edin.
Chas. H. Barkley, L.R.C.P. & S., Edin.

LECTURERS.

Dental Anatomy and Physiology	Thomas Gaddes, L.D.S., Eng., and Edin.
Dental Surgery and Pathology	Willoughby Weiss, L.D.S., Eng.
Dental Mechanics	Harry Rose, L.D.S., Eng.
Dental Metallurgy	W. Lapraik, F.I.C., F.C.S.
Operative Dental Surgery ...	George Cunningham, B.A., D.M.D., L.D.S., Eng.
Dental Materia Medica	C. W. Glassington, M.R.C.S., L.D.S., Ed.
Elements of Histology	James Maughan, M.D., L.R.C.P., M.R.C.S.
Demonstrator of Dental Mechanics	W. R. Humby, L.D.S., Eng.

The Hospital is open for the reception of patients every week-day, from 9 o'clock till 11 o'clock a.m. The House Surgeon and Assistant House Surgeon attend daily, from 9 a.m. till 2 o'clock p.m.

Dresserships in the Extraction Room.

These appointments are held for three months by six senior and six junior students of the Hospital. The respective dressers for each day are required to be in attendance from 9 o'clock till the conclusion of the practice; and they will be under the direction of the Dental Surgeons of the day and of the House Surgeon.

Clinical Lectures and Demonstrations.

Each medical officer will give clinical lectures, when opportune, during the ensuing year. Clinical lectures will also be given from time to time on cases of special interest; and also demonstrations upon the preparing and filling of cavities and other operations upon the teeth and contiguous parts.

Attendance and Examination of Students.

A register is kept of the attendance of students at the Hospital practice and lectures. An attendance of full two years at Hospital practice is required by the College of Surgeons of England; and no schedule will be signed for any lectures of which less than two-thirds have been attended. Class examinations are held frequently during the several courses, to test the progress and attention of the pupils; and at the end of each course of lectures a written examination is held. An insufficient attendance at lectures disqualifies the student for receiving any prize of that year.

Tutorial classes are held by the Dean, to prepare for the final examinations, students who have, at this school, complied with the Dental portion of the Curriculum.

LECTURES.

Winter Session, commencing on Monday, Oct. 1st, 1888.

Dental Anatomy and Physiology, by Thomas Gaddes, L.D.S., Eng. and Edin. On Tuesdays and Thursdays, at 6 p.m., during October, November, and December.

Operative Dental Surgery, by George Cunningham, B.A., D.M.D., L.D.S., Eng. On Mondays, at 6 30 p.m., during October, November and December. (Free to students of the Hospital and College.)

Dental Materia Medica and Therapeutics, by Chas. W. Glassington M.R.C.S., L.D.S., Edin. On Tuesdays, at 7.30 p.m., during October, November, and December. (Free to students of the College.)

Dental Metallurgy, by W. Lapraik, F.I.C., F.C.S. On Tuesdays, at 7.30 p.m., during January, February, and March.

Dental Mechanics, by Harry Rose, L.D.S., Eng. On Mondays, at 7 p.m., during January, February, and March.

Demonstrations on Dental Mechanics, by W. Robinson Humby, L.D.S., Eng. On Wednesdays, at 7 p.m., during January, February, and March. (Free to students of the College.)

Summer Session, 1889.

Dental Surgery and Pathology, by Willoughby Weiss, L.D.S., Eng. On Mondays and Thursdays, at 6 p.m., during May, June, and July.

Elements of Histology, by James Maughan, M.D., L.R.C.P., M.R.C.S. On Mondays and Thursdays, at 5 p.m., during May, June, and July. (Free to students of the College.)

FEES.

General Fee for Special Lectures required by the Curriculum of the Royal College of Surgeons in England. £12 12s.

Fees to Single Courses.	One Course.	Two Courses.
Dental Anatomy and Physiology	£2 12 6	£4 4 0
Dental Surgery and Pathology	2 12 6	4 4 0
Dental Mechanics	2 12 6	4 4 0
Dental Metallurgy	3 3 0	5 5 0
*Operative Dental Surgery	2 12 6	
*Dental Materia Medica	2 2 0	
*Elements of Histology	1 1 0	
*Demonstrations on Dental Mechanics	1 1 0	

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* These lectures are free to students of the College who have fully entered for the Special Lectures.

Hospital Practice to Registered Practitioners (six months), £7 7s. Ditto (twelve months), £9 9s.

Fee for the two years' Hospital Practice required by the Curriculum, £12 12s. Perpetual Fee, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s. Perpetual Fee, £31 10s.

PRIZES.

Six Prizes, in Medals, are open for competition among the students of the College, at the end of each Course of Lectures, on the following subjects, viz.: Dental Anatomy, Dental Surgery, Dental Mechanics, Metallurgy, Operative Dental Surgery, and Dental Materia Medica.

Certificates of Honour will be awarded to those Students who show superior proficiency in any of the classes.

The Rymer Gold Medal for General Proficiency, value £5, will be awarded annually to the most distinguished Student of the year. His general conduct and attendance must have been in every respect satisfactory. At the time of the special examination for the Rymer Medal the Student must not hold any qualification. The Medal will be awarded on the understanding that the Student completes the Dental Curriculum.

The Public Distribution of Prizes will take place during the Summer Session.

THOMAS GADDES, *Dean*.

EDINBURGH.

DENTAL HOSPITAL AND SCHOOLS.

Consulting Physician—ALEX. PEDDIE, M.D., F.R.C.P.E.
Cosulting Surgeon—JOSEPH BELL, F.R,C.S.E.
Consulting Surgeon Dentist—Dr. JOHN SMITH, F.R.C.S.E.

Dental Surgeons.

CHARLES MATTHEW, L.D.S. Edin.
WILLIAM BOWMAN MACLEOD, L.D.S. Edin.
MATTHEW FINLAYSON, L.D.S., Edin.
ANDREW WILSON, L.D.S., Edin.
GEORGE W. WATSON, L.D.S., Edin.
MALCOLM MACGREGOR, L.D.S., Edin.
J. S. DURWARD, L.D.S.

Assistant Dental Surgeons.

J. S. AMOORE, L.D.S., Eng.
W. WILSON, L.D S., M.B. & C.M.
J. GRAHAM MUNRO, L.D.S., Edin.
JAMES MACKINSON.
J. LINDSAY, L.D.S., Edin.
W. FORRESTER.

Honorary Treasurer and Dean.

WM. BOWMAN MACLEOD, L.D.S. 16, George Square.

DENTAL SCHOOL.

LECTURES.

Dental Anatomy and Physiology (Human and Comparative) by ANDREW WILSON, L.D.S. (Edin.)—These Lectures will be delivered on the evenings of Tuesday and Friday, at 8 o'clock, commencing on 1st November, 1888. The course, consisting of twenty-four Lectures, will be illustrated by preparations, models, diagrams, microscopical specimens, etc.

Dental Surgery and Pathology, by GEORGE W. WATSON, L.D.S. (Edin.)—These Lectures will be delivered on the mornings of Tuesday and Friday, at 8 o'clock, during the Summer Session, commencing May, 1889. The Course, consisting of twenty-two Lectures, will be illustrated by preparations, models, diagrams, microscopical preparations, etc.

Mechanical Dentistry, by W. **Bowman Macleod**, L.D.S. (Edin.)—The Lectures will commence on 9th November, 1888, at 1 p.m., and be continued every Wednesday thereafter till the Course of at least twelve Lectures is concluded.

Practical Mechanics—Assistant Demonstrator, J. **Stewart Durward**, L.D.S. (Edin.)—In addition to the Systematic Lectures, there will be given, during the Session, Demonstrations on Dental Mechanics, and each Student will be expected to prepare the mouth, take the impression, make the denture, and insert the same in at least four cases. The Demonstrations will be spread over the two years of Hospital practice, and will be given as occasion serves. Students will require to furnish their own hand tools.

In the variour classes prizes will be offered for competition.

General Fee for the Hospital Practice and special Lectures required by the Curriculum.—Hospital Practice, £15 15s. One Course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15s.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The Hospital Practice and Lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other Licensing Bodies. Second Courses of the Lectures, as required by the Royal College of Surgeons of England, £2 4s.

For further information apply to the Dean, who will be found at the Hospital every Wednesday morning between 9 and 10 o'clock.

The Session 1888-9 opens October 18, 1888.

General Fee for the Hospital Practice and Special Lectures required by the Curriculum.

Hospital Practice, Two Years	£15	15	0
One Course of 24 Lectures in Dental Anatomy	9	15	0
,, 22 ,, ,, Surgery			
,, 12 ,, ,, Mechanics			
Total	£25	10	0

For further particulars, apply to the Dean, 30, Chambers Street, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL,

56, GEORGE SQUARE.

Hon. Consulting Physician.—W. T. **Gairdner**, M.D.
Hon. Consulting Surgeon —**Sir** G. H. B. **Macleod**, M.D.
Chloroformists.—Drs. **Brown** and **Mechan**.

Dental Surgeons.

J. A. **Biggs**.
W. S. **Woodburn**, L.D.S., F.P.S.G.
Rees Price, L.D.S. Eng.
James Cumming, L.D.D., Glas.
J. R. **Brownlie**, L.D.S, M.R.C.P. Eng.
J. C. **Woodburn**, M.D.

Assistant Dental Surgeons.

A. B. **Young**, L.D S., Glas.
W. M. **Adamson**, L.D.S., Glas.
W. F. **Martin**. L.D.S.
J. M. **McCash**, L D.S , Glas.
Oswald Fergus, L.D.S., Glas., D.D.S, Phil.

Dental House Surgeon.—

The Hospital is open daily except Sunday, from 5 p.m. till 7 p.m.

The work of the Hospital is conducted, as far as possible, by the Students, under the supervision of the Dental Officer of the day. Cases of special interest will be made the subject of clinical instruction or demonstration as they occur.

The practice of the Hospital may be entered upon at any time during the Session, and attendance dated therefrom. Fee for the two years' practice required by the Curriculum, £12 12s. Fee for each course of Lectures, £3 3s.

The Dental Students' Society meets once a month in the Committee Room of the Hospital, when papers on subjects of interest are read and discussed by the Members.

DENTAL SCHOOL.

Dental Anatomy and Physiology, Human and Comparative, by J. Cowan Woodburn, M.D.

The Lectures will be delivered in the Summer Session, on the mornings of Wednesday and Friday, at 8 a.m., and will be illustrated by Diagrams, Preparations, and Microscopic Specimens. Text-Book—Tomes, Manual of Dental Anatomy, Human and Comparative.

Dental Surgery and Pathology, by James Rankin Brownlie, L.D.S., Eng., M.R.C.S.

These Lectures are delivered on Tuesdays and Thursdays, during the months of May and June, at 8 a.m., and will be illustrated by recent Specimens, and other Preparations and Drawings, &c. Text-books—Tomes, Manual of Dental Surgery; Salter's Dental Pathology and Surgery.

Mechanical Dentistry, by Rees Price, L.D.S., Eng.

This Course will commence on the first Thursday of October, at 8 p.m., and will consist of 12 Lectures, with Practical Demonstrations in Dental Laboratory.

All communications on matters relating to the Dental School should be addressed to J. R. Brownlie, 220, West George Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM.

BIRMINGHAM SCHOOL OF DENTISTRY, QUEEN'S COLLEGE.

The teaching of Dentistry is now undertaken by the Queen's College, acting in association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges.

The Dental Hospital is situated near the College, and is open daily (Sundays excepted). The number of patients treated there during the past year was upwards of 10,000.

The General and Queen's Hospitals offer every advantage for the study of General Surgery and Medicine, the arrangements for which are carried out under the direction of the Birmingham Clinical Board.

LECTURES FOR THE DENTAL CURRICULUM.

WINTER SESSION.

Special Subjects.

Dental Anatomy and Physiology.—J. Humphreys, L.D.S.I., Dental Surgeon to the Dental Hospital. Thursday at 5 p.m.

Dental Surgery and Pathology.—C Sims, L.D.S., Eng., Senior Dental Surgeon to the Dental and Queen's Hospitals. Fridays at 5 p.m.

Dental Metallurgy.—W. A. Tilden, D.Sc., F.R.S. *N.B.*—This class will be held at Mason's College. About ten lectures on this subject will be given on Tuesdays at 2.30 p.m., from October to Christmas.

General Subjects.

Anatomy, Practical Anatomy, Physiology, Chemistry, Medicine, Surgery. These Classes are similar to those in the Medical Department.

SUMMER SESSION.

Special Subjects.

Dental Mechanics.—W. ELLIOTT, L.D.S., Edin., & Dub., F.C.S., Wednesdays, at 5 p.m.

General Subjects.

Materia Medica and Therapeutics.—Practical Chemistry.—These Classes are similar to those in the Medical Department.

FEES.

A Composition Fee of 60 guineas, payable in one sum or in two sums, viz., 40 guineas at the beginning of the first year and 20 guineas at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary Hospital Practice).

N.B.—Further particulars may be obtained on application to the Warden at the College, or to the Hon. Secretary of Surgical Committee, Dental Hospital.

BIRMINGHAM DENTAL HOSPITAL, 71, NEWHALL STREET.

OPEN DAILY AT NINE A.M.

Hon. Consulting Physician—ROBERT M. SIMON, M.D.
Hon. Consulting Surgeon—JOHN St. S WILDERS, M.R.C.S.

Hon. Consulting Dentists.

THOMAS R. ENGLISH.
ADAMS PARKER, L.D.S., Eng.
CHARLES SIMS, L.D.S.

Hon. Administrators of Anæsthetics.

S. HAYNES, M.B., Ch. M.
CHARLES GRUNE, M.R.C.S. L.R.C.P.
J. B. HUXLEY, M.D.
WRIGHT WILSON, F.R.C.S.
E. DENNIS VINRACE, M.R.C.S.

Hon. Dental Surgeons.

H. BREWARD NEALE, L.D.S.I.
F. E. HUXLEY, M.R.C.,S.L.D.S.
J. HUMPHREYS, L.D.S.I.
F. W. RICHARDS, L.D.S., Eng.

Hon. Assistant Dental Surgeons.

F. H. GOFFE, L.D.S.
WM. PALETHORPE, L.D.S.
W. R. ROBERTS, L.D.S.
GEO. O. RICHARDS, M.R.C.S., L.D.S.

DAYS OF ATTENDANCE.

Mondays...	MR. J. HUNPHREY & MR. GOFFE.
Tuesdays	MR. F. W. RICHARDS & G. O. RICHARDS.
Wednesdays	MR. GOFFE & MR. ROBERTS.
Thursdays	MR. H. BREWARD NEALE & MR. PALETHORPE.
Fridays	MR. F. W. RICHARDS & MR. PAELTHORPE.
Saturdays	MR. F. E. HUXLEY & MR. GEO. RICHARDS.

DEMONSTRATIONS.

Clinical Demonstrations will be given from time to time by the staff on cases of particular interest; also upon the preparing and filling of cavities and other operations upon the teeth and contiguous structures.

Dresserships, &c. (as previously).

Dental Students are required to register their names for Hospital Practice with the Honorary Surgical Secretary, Mr. F. W. Richards, 33, Paradise Street, from whom further information may be obtained.

DENTAL HOSPITAL OF IRELAND.

29, YORK STREET, DUBLIN.

The WINTER SESSION will commence Monday, October 1st, 1888.

The SUMMER SESSION will commence in May, 1889.

Consulting Physicians.

ROBERT D. LYONS, M.D., M.P. | JOHN W. MOORE, M.D.

Consulting Surgeons.

D. H. BENNETT, F.R.C.S.I. | W. STOKES, F.R.C.S.I.

Consulting Dental Surgeons.

R. H. MOORE, F.R.C.S.I. | DANIEL CORBETT, M.R.C.S.Eng.

Dental Surgeons.

JOHN A. BAKER, F.R.C.S.I.
R. THEODORE STACK, F.R.C.S.I. D.M.D. (Harv.) L.D.S, Eng.
A. W. W. BAKER, M.B., Ch.,M., L.D.S.
DANIEL CORBETT, JUN., F.R.C.S.I.

Demonstrator—G. W. YEATES, M.B., Ch.M., L.D.S.

Pathologist—PHIN. S. ABRAHAM, F.R.C.S.I.

Registrar—WILLIAM A. SHEA.

In connection with the Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 1st, 1888.

All Dental Students who have passed their Preliminary Examination are admissable to the Clinical Instruction of the Hospital, after paying Fees and subscribing to the conditions prescribed by the staff.

In addition to Clinical Instruction, Courses of Lectures will be given through the year on Dental Surgery, Dental Anatomy, Mechanical Dentistry, and Metallurgy, by the following Lecturers:—Dental Surgery: A. W. W. Baker, M.B., Ch.M. Dental Anatomy: Daniel Corbett, Jun., A.B., F.R.C.S.I. Mechanical Dentistry: R. Theodore Stack, M.D., F.R.C.S.I., D.M.D., Professor of Dentistry, Royal College of Surgeons, Metallurgy: Charles Cameron, M.D., F.R.C.S.I., Professor of Chemistry, Royal College of Surgeons.

These Lectures are intended to supplement the lectures given in the Medical Schools, and give to the Dental Student in Ireland the opportunity of fulfiling in his own country the conditions of curriculum required by the different licensing bodies in the United Kingdom.

The lectures on Mechanical Dentistry and Metallurgy will be given during the winter; those on Dental Surgery and Anatomy during the summer months. In addition to the longer courses, special courses, of three months' duration, will be given to Surgeons about to join the Army and Navy, or to practise in the Colonies.

Among the advantages of the School is the Mechanical Laboratory, where each Student is allotted his own bench, and every effort is made to assist him in Mechanical Dentistry. This year, in addition to practical instruction in the details of Gold, Dental Alloy, Vulcanite, Celluloid, and continuous Gum Work, special demonstrations will be given in the Mechanical treatment of Cleft Palate, by Mr. Theodore Stack; in the treatment of Dental Irregularities, by Mr. A. W. W. Baker; and in the various methods of inserting Pivot Teeth, by Mr. Daniel Corbett, jun.

Regulations as to Fees and other conditions are the same that exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from the Registrar of the Hospital, or

R. THEODORE STACK, Dean.

THE OWEN'S COLLEGE, MANCHESTER.

DENTAL DEPARTMENT.

Professors and Lecturers.

Anatomy—Professor A. H. Young, M.B., F.R.C.S.
Physiology—Professor Wm. Stirling, M.D., D.Sc.
Medicine—Professor J. E Morgan, M.D., M.A., F.R.C.P.
Professor James Ross, M.D., L.L.D., F.R.C.S.
Surgery—Professor A. W. Hare, M.B., M.R.C.S
Chemistry—Professor H. B. Dixon, M.A., F.R.S.
Materia Medica—Professor D. J. Leech, M.D., F.R.C.S
Dental Surgery—Geo. G. Campion, L.D.S.
Dental Anatomy—A. M. Paterson, M.D., M.R.C.S.
Dental Mechanics—Thos. Tanner, L.D.S.
Dental Metallurgy—C. A. Burghardt, Ph. D.

The fee for the 2 years' lectures, &c., required by the dental curriculum of the Colleges of Surgeons is £50 payable in two sums of £25 each at the beginning of the first and second years of studentship.

The 2 years' general Hospital practice is taken at the Royal Infirmary. The fee is £10 10 0, and includes that for attendance on the Lectures on Clinical Surgery.

For further particulars with regard to the Dental Department, application should be made to the Registrar, The Owen's College, Manchester.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER.

GROSVENOR STREET, ALL SAINTS.

Consulting Physicians.

Sir Wm. Roberts, M.D., F.R.C.P.
J. E. Morgan, H.D., F.R.C.P.
Henry Simpson, M.D., M.R.C.S.
D. J. Leech, M.D., F.R.C.S.
D. Lloyd Roberts, M.D., F.R.C.P.

Consulting Surgeons.

E. Lund, F.R.C.S.
W. Whitehead, F.R.C.S.
F. A. Heath, M.R.C.S.
T. Jones, F.R.C.S.
J. Hardie, F.R.C.S.

Consulting Dental Surgeons.

H. Campion, M R.C.S.
S A. Rogers, L.D.S., Eng.
Parsons Shaw, D.D S.

Dental Surgeons.

Monday Morning—H Planck, L.D.S.I.; J. Renshaw, L.D.S.I.
Monday Evening—E P. Collett, L.D.S., Eng; H. Wood, L.D.S.I.
Tuesday Morning—T. Tanner, L.D.S., Eng.
Wednesday Morning—J. H. Molloy, L.D.S.I.; G. O. Whittaker, L D.S., Eng.
Wednesday Evening.—W. Dykes, L D S., Glasgow.
Thursday Morning—W. Dougan, L.D.S I.; G. Nash Skipp, L.D.S., Eng.
Friday Morning G. G. Campion L.D.S, Eng; W. Sims. L.D.S.I.
Friday Evening...L, Dreschfeld, L.D.S.I.; W. Headridge, L.D.S I.
Saturday Morning—J. W. Dunkerley, L.D.S.I.; W. Smithard, L.D.S.I.

Administrator of Anæsthetics.

Wednesday Morning—J. Prince Stallard, M.B.
Saturday Morning—Alexander Wilson, M R.C.S.

House Dental Surgeon.

C. H. Smale, L.D.S., Eng.

The Hospital is situated conveniently for Students about 5 minutes' walk from The Owen's College. It contains 3 separate operating rooms devoted respectively to fillings, extractions, and operations under anæsthetics, and is open each morning in the week and on Monday, Wednesday and Friday evenings.

A prize: value 3 guineas on operative dentistry is awarded annually, and the prizes at The Owen's College are also open to the students of the hospital attending the lectures.

The fee for the 2 years' hospital practice required by the Colleges of Surgeons is £12 12 0.

For further information apply to Henry Planck, *Dean*.

LIVERPOOL

DENTAL HOSPITAL, MOUNT PLEASANT.

Northern Branch—15, GREAT MERSEY STREET.

Consulting Physician—Thomas Robinson Glynn, M.D., M.R.C.P., Lond.

Consulting Surgeon—Frank T. Paul, F.R.C.S., Eng.

Consulting Dental Surgeons.

C. Alder, L.D.S.,
H. C. Quinby, L.D.S., D.D.S.
J. E. Rose,
W. H. Waite, L.D.S., D.D.S.

Honorary Dental Surgeons.

E. A. Councell, L.D.S., Eng.
R. Edwards, M.R.C.S., L.D.S., Eng.
H. N. Hindley, L.D.S., Eng.
W. Mapplebeck, L.D.S.I.
W. Matthews, L.D.S., Eng.
J. N. P. Newton, L.D.S., Eng., D.D.S.
J. Pidgeon, L.D.S., Eng.
M. Quinby, D.D.S.
J. Royston, L.D.S., Eng.
G. A. Williams, D.M.D.

Honorary Assistant Dental Surgeons.

M. Alexander, L.D.S.I.
E. A. Davies, L.D.S.I.

Honorary Demonstrator of Operative Dental Surgery.

Thomas Mansell, L.D.S., Edin.

Honorary Chloroformist—H. Briggs. M.B., F.R.C.S.

Stipendiary Dental Surgeons.

Head Hospital—C. T. Stewart.

Northern Branch—Charles B. Dopson, L.D.S.I.

Registrar—R. Edwards, M.R.C.S., L.D.S., Eng.

This Hospital is a school of Practical Dental Surgery, duly recognised by the Royal College of Surgeons, and open to all Students of Dentistry, under such regulations as shall be determined by the Committee of Management.

The Hospital is open daily for the admission of patients from 8.30 til 10 a.m., and from 5.30 to 8 p.m. Northern Branch open 9 to 10 a.m., and 6 to 7 p.m.

Fees for Hospital practice, £5 5s. per annum, or a composition fee of £8 8s. for two years' Hospital Practice required for the curriculum to Students of the Medical Faculty, University College, Liverpool, and pupils or apprentices of registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. Jackson, 6, Queen Insurance Buildings, 10, Dale Street.

PLYMOUTH.

DENTAL HOSPITAL, OCTAGON.

Physician—C. Albert Hingston, M.D., Lond.

Surgeons.

Christopher Bulteel, F.R.C.S.
Connel Whipple, M.R.C.S.

Consulting Dentist—F. A. Jewers, M.D.S.

Dental Surgeons.

W. V. **Moore**, L.D.S., Eng.
C. S. **Bate**, F.R.S., Eng.
F. H. **Balkwill**, L.D.S., Eng.
Ernest E. Jewers, L.D.S., Eng.
Ernest Edward Jewers, L.D.S.E.
Henry William Mayne, L.D.S.I.
Louis E. Sexton, L.D.S., Eng.

Treasurer—**Alfred Payne Balkwill.**

The Dentists attend each day, at 9 a.m. except Sundays.

DENTAL SCHOOL.

Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognises the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupil, or pupils, on the payment of £1 1s. per annum to the Institution.

Lectures.

On "Dental Physiology," by C. **Spence Bate**, F.R.S., L.D.S.
On "Dental Anatomy," by F. H. **Balkwill**, L.D.S.
On "Dental Mechanics," by W. V. **Moore**, L.D.S.
Fee to Lectures, one Course, £7 7s.
Fee to Lectures, double Course, £12 12s. (required for Diploma).
Fee to Dental Practice at Hospital, £5 5s. per annum.
Fee to entire Dental Curriculum (required for Diploma), 22 Guineas.

Further information may be obtained from the Secretary, Mr. E. G. **Bennett**, at above address.

EXETER.

DENTAL HOSPITAL.

Consulting Surgeon.

A. J. **Cumming**, F.R.C.S., Eng.

Dental Surgeons.

J. T. **Browne-Mason**, L.D.S., Eng.
S. **Bevan Fox**, L.D.S., Eng.
Henry Biging Mason, L.D.S., Eng.
T. G. T. **Garland**, L.D.S.I.
J. M. **Ackland**, M.R.C.S., L.D.S., Eng.
S. **Mundell**, L.D.S., Eng.

Surgeon Administrators of Anaesthetics.

John Mortimer, M.B., Lond.
Martin L. Brown, M.D., Ed.

Hon. Secretary and Curator.

W. **May.**

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

The Hospital is open Daily (Sundays excepted), and patients are admitted between the hours of 9 and 11 a.m.

Pupils of any member of the Staff or other registered Practitioner (being a Life or Annual Governor) are admitted to attend the practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of Five Guineas annually to the Funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

Numbers of cases treated in 1887, 6138.

PRIVATE SCHOOL OF ANATOMY, PHYSIOLOGY AND SURGERY.

And also professional subjects, including Chemistry, Physics, Materia Medica, Botany and Pharmacy; Medicine Obstetrics, Diseases of Women and Children; Comparative Anatomy, Embryology, etc.

Demonstrations and Lectures by Mr. Thomas Cooke, F.R.C.S., senior Assistant Surgeon to the Westminster Hospital, and other Masters.

By decision of the Royal College of Physicians and Surgeons, gentlemen rejected at their Anatomical and Physiological Examinations (Primary R.C.S. or Second Conjoint) can get "signed up" from this School for the three or six month's work they are now required to put in before re-examination.

The school meets the requirements of two classes of students, namely:—

I. Students preparing for the usual Primary and Pass Examinations of the several Licensing Bodies.

II. Qualified Practitioners and advanced Students, *i.e.*, gentleman wishing either to obtain some of the Higher Qualifications, or to compete for Appointments in Her Majesty's Army, Navy, and Indian Medical Services. For these special Classes are provided. (See separate Prospectus.)

The instruction is given on the dissected and undissected body, with normal and pathological specimens, microscopical preparations, chemical, physiological, and surgical apparatus, splints, &c. The operations of Surgery are performed on the dead body. Arrangements can be made for the attendance on midwifery cases, and for practical work in the dispensary.

The school possesses a good collection of physiological apparatus, allowing of the demonstration to the class of the great bulk of the Practical Exercises in Physiology by Professors Burden-Sanderson, Fosters and Langley, and other authors; also chemical apparatus, allowing every student, not only to see, but to repeat for himself, the analysis of the principal food-stuffs, and fluids and solids of the body, and also all the usual reactions, tests, &c. Gentlemen preparing for the Higher Examinations (M.B., Lond., Fellowship of the Royal College of Surgeons) receive special instruction in the more difficult subjects, and have the advantage of personally repeating (with certain restrictions as to the careful use of the physiological apparatus) the practical exercises in Physiology by Professors Burden-Sanderson, Fosters and Langley, &c., above alluded to.

A Chemical Laboratory has been provided; and the necessary collections for the practical teaching of Chemistry, Materia Medica, and Pharmacy have been placed in the hands of an experienced teacher of these subjects.

IV.—GENERAL HOSPITALS.

CHARING CROSS HOSPITAL.

Dental Surgeon—J. FAIRBANK, M.R.C.S., who attends at the Hospital, three days a week, at 9 a.m., for Dental operations. A course of Lectures on Dental Surgery is also given during January, February, and March.

The fee at this hospital for the L.D.S. Course is £42 2s., which may be paid in two instalments; this includes the Library fee £2 2s., for which the student enjoys all the privileges of general students, which are as follows:

1st. They pay a proportionately lower amount of fees.

2nd. They alone are eligible for the following offices and appointments:— Resident medical officers, resident surgical officers, resident accoucheur, assistant demonstrators, pathological assistant, clinical clerks, dressers, dentist's assistants, etc.

3rd. They are admitted to the use of the library and reading-room and museum.

4th. They are admitted, without additional fee to the clinical and pathological demonstrations, and enjoy other advantages.

5th. They alone are entitled to compete for the scholarships.

Two prizes are awarded annually in the class of Lectures on Dental Surgery, of the value of six guineas and four guineas respectively.

Students may serve as assistants to the Dental Surgeon for a period of three months.

The attention of Dental students is drawn to the re-arrangements which have been made in the hours of lectures, so as to enable students to attend the practice at the Dental Hospital of London. Charing Cross Hospital is within three minutes' walk of the Dental Hospital of London.

For further information apply to the Dean, Dr. J. Mitchell Bruce, or to the Secretary, who attends daily at the office of the Medical School, Chandos Street, Charing Cross, between the hours of 10 and 4.

LONDON HOSPITAL MEDICAL COLLEGE.

Dental Surgeon—ASHLEY BARRETT, M.B., Lond., M.R.C.S., L.D.S.

The Council of the College of Surgeons recognise the Dental Department of the London Hospital as a school at which may be obtained the Dental Practice necessary to qualify a student for the Examination of the Dental Diploma. Dental Students may obtain the General Medical Education (that is, apart from certain special Lectures to be attended at a Dental School) and the Dental Practice necessary for the Diploma, at the London Hospital School, on payment of Forty Guineas.

A course of Lectures on the Anatomy and Pathology of the Teeth and Dental Surgery will be delivered by Mr. Ashley Barratt, on days which will be duly announced. It comprises the treatment of Dental Irregularities, of Dental Caries, and such matters in connection with the subject as are of interest to the Medical Practitioner. Mr. Barratt gives practical instruction on Tuesdays, at 9 a.m., which is open to all students of the School and Hospital, and can be attended by gentlemen who are not pupils on payment of a fee of Ten Guineas.

In addition to the Lectures a series of Demonstrations of the simpler modes of filling Teeth will be given during the month of June. The Demonstrations will refer to the mode of Manipulating Amalgam and Gutta Percha fillings, the preparation of Cavities, the filling of Teeth containing vital and dead pulps, the mode of relieving pain after filling, and the instruments needed for these operations.

A Dental Assistant is elected every three months, without any additional expense. The terms of the office date from the first Tuesday in January, April, July, and October. In selecting Candidates, priority will be given to those who have attended the greatest number of Lectures on Dental Pathology and Surgery, and have also been the most punctual in attendance in the Dental Department on Tuesday mornings.

Further information may be obtained on application to Mr. Munro Scott, the Warden, Medical College, London Hospital.

KING'S COLLEGE, STRAND, W.C.

Special arrangements are made for Dental Students. Apply to the Dean.

MIDDLESEX HOSPITAL.

Consulting Dental Surgeons—SIR J. TOMES, F.R.S., F.R.C.S., L.D.S., and J. S. TURNER, M.R.C.S., L.D.S.

Dental Surgeon—W. STORER BENNETT, F.R.C.S., L.R.C.P., L.D.S.

Assistant Dental Surgeon—W. HERN, M.R.C.S., L.D.S.

In 1887 the acquisition of a site in Cleveland Street enabled a much needed extension of the Buildings to be carried out. The additions included an additional Lecture Theatre, a Physiological Laboratory and Class Room, a Student's Room, and a Luncheon Room A new and commodious Library and a Materia Medica Museum have also been opened.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of Lectures—which are arranged to fit in with the work at the Dental Hospitals—and Hospital Practice on payment of a fee of 40 guineas, in one payment, or by instalments of £30 on entrance, and £15 at the beginning of the second Winter Session.

A short course of Lectures on Dental Surgery will be delivered during November and December by the Lecturer on Dental Surgery, Mr. Storer Bennett. The Lectures will be supplemented by practical Demonstrations, which will be given every week during the Winter and Summer Sessions by the Dental Surgeon and Assistant Dental Surgeon. Students of the Hospital free, others pay a fee of 2 guineas.

Further information may be obtained from A. Pearce Gould, Esq., the Dean, or from the Resident Medical Officer at the Hospital.

GUY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—F. NEWLAND PEDLEY, F.R.C.S., L.D.S.

Dressers are appointed to the Dental Surgeon, and hold office for two months.

The Dental Surgeon attends on Tuesdays, Thursdays, and Fridays at 1.30. On Tuesdays and Thursdays cases of Dental Surgery are treated, especially such as require the administration of Nitrous Oxide Gas, which is given to all patients who need it. On Friday afternoons the sitting is mainly devoted to the treatment of special cases and demonstrations on the operations of modern conservative Dental Surgery. It is on this afternoon that patients under treatment for fractures of the jaw, and children wearing regulating plates, are seen. Supplemental jaws, palates, and teeth, are adapted, to restore parts lost by disease or Surgical operation. Cleft palates are treated by mechanical apparatus. Practical instruction is given in the stopping of teeth with gold, amalgam, &c.

In the Summer Session a short course of Lectures introductory to the practice of Dental Surgery is delivered by Mr. Newland Pedley.

For further information and prospectus of the School, apply to the Dean, Dr. Perry.

ST. GEORGE'S HOSPITAL.

Dental Surgeon—A. WINTERBOTTOM, F.R.C.S., L.D.S.

Mr. Winterbottom attends at the hospital on Tuesdays and Saturdays at 9 a.m.; his assistant daily at 9 a.m. and at 1 p.m.

A course of Lectures on Dental Surgery is given by Mr. Winterbottom in the Summer Session. Free to students of the hospital.

Fee for general subjects in Dental Surgery, including Practical Chemistry, £55. Payable in two instalments; first year, £30; second year, £25.

Further information can be obtained by application to Dr. WHIPHAM, Dean of the Medical School.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.

Dental Surgeons—MR. EWBANK, MR. PATERSON.
Assistant Dental Surgeons—MR. ACKERY, MR. MACKRELL.

The Dental Department of the Hospital is open on Tuesday and Friday mornings at 9 o'clock. The practice of the department is recognised by the Royal College of Surgeons.

The fee for general subjects for Dental students for the first winter is £33 2s. 6d., for the first summer £33 2s. 6d., or a single payment of £66 3s.

This hospital is the oldest and one of the largest in London, and among many advantages which it offers to the student is that provision is made for their residence in the College, on the recommendation of a medical officer of the Hospital. For the terms of board and residence, and all other information regarding the College, applications should be made, either personally or by letter, to the Warden of the College, Dr. Moore.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

Dental Surgeon—H. HOWARD HAYWARD, M.R.C.S., L.D.S.

Practical instruction in Dental operations is given on Wednesdays and Saturdays, at 9.30 a.m. Dressers are appointed, who hold office for three months. Also a special course of Lectures on Dental Surgery.

Fee for the course. £2 12s. 6d.

For prospectus and further information apply to the Dean, who may be consulted in his room daily at 3.30 p.m., ; or to the Medical Superintendent at the Hospital.

GEORGE P. FIELD, Dean of the School.
SIDNEY PHILLIPS, M.D., Sub-Dean.

ST. THOMAS'S HOSPITAL.

Dental Surgeon—CHARLES EDWIN TRUMAN, M.R,C.S., L.D.S.
Assistant Dental Surgeon—

Gentlemen may receive instruction in diseases of teeth, are appointed dressers, and can undertake operations, subject to the supervision of the Dental Surgeons, Tuesdays and Fridays at 10 a.m.

Numerous cases of irregularity of the teeth, and the application of artificial appliances, are undertaken during the term.

The fee for attendance on the *general* subjects required of the students in Dental Surgery, is, for the two years, £55, or by instalments, £50 for the first year, and £10 for the second year.

Dental practice, one year, two guineas; perpetual, three guineas.

For further information apply to G. RENDLE, Esq. M.R.C.S., Medical ecretary.

WESTMINSTER HOSPITAL.

Dental Surgeons—J. WALKER, M.D., M.R.C.S , L.D.S., and A. MORTON SMALE, M.R.C.S., L.D.S.

Dr. Walker attends at 9.15 'a.m. on Wednesdays, and Mr. Morton Smale on Saturdays at 9 15 a.m., for practical demonstration of diseases and operations on the teeth.

The fee for attendance on the Dental Practice is £2 2s. for three months, and £3 3s. for six months. The whole of the General Lectures and Surgical Practice required for the Dental Diploma of the College of Surgeons can be attended for £50, in one sum on entrance or for two sums of £32 10s, and £20, payable at the beginning of each year.

Dr. Walker will deliver a course of Lectures on Dental Surgery and Pathology on Wednesdays, in October, November, and December, at 9.30 a.m.

Classes in Metallurgy in its application to Dental purposes, Dental Anatomy and Physiology, and in Dental Mechanics, will be formed should a sufficient number of Students give in their names.

The Calendar will be forwarded on application to Mr. Donkin, Dean of the School, who will afford every information.

SCHOOL OF MEDICINE, SURGEON'S HALL, EDINBURGH.

The fees required for students attending general subjects necessary for the curriculum of the Royal College of Surgeons, Edinburgh, are £38 10s.

HARVARD UNIVERSITY, DENTAL DEPARTMENT, BOSTON MASS., U.S.A.

The Sessions of this School begin the last Thursday in September, and end the last Wednesday in June, making nine months of practically continuous work in each year.

General Anatomy, with Dissections, Physiology, and General Chemistry, are the studies of the first year. Of the second year they are Operative and Mechanical Dentistry, Dental Materia Medica and Therapeutics, Oral Surgery, and Surgical Pathology. The Student can also attend gratuitously all the *lectures* in any other department of the University.

The infirmary of the Massachusetts Hospital furnishes abundant facilities, averaging 8,000 operations, of which a large proportion consist of filling teeth, every year.

The University degree, D.M.D. (Dentariæ Medicinæ Doctor) is conferred on all who fulfil the requirements.

The diploma is recognised by the English Medical Council.

For the first year a student is a member of the school, the fee is 200 dols; for the second year, 150 dols; and for any subsequent year, 50 dols.

For further information and catalogues, address; Thomas H. Chandler, Dean, Hotel Bristol, corner of Boylston and Clarendon Streets, Boston, Mass. U.S.A.

THE DENTAL COLLEGE OF THE UNIVERSITY OF MICHIGAN.

The Thirteenth Annual Session of this Institution will commence on the 1st of October, and close on the last Wednesday of June, thus making a course of nine months. A preliminary examination, having reference to general educational attainments, is required.

The Student in this department will receive instructions in Anatomy, Physiology, Pathology, Chemistry, Materia Medica, Therapeutics and Surgery, from the professors of their respective branches in the *Department of Medicine and Surgery* of the University, when lectures commence and continue the same as with the Dental College.

FACULTY OF THE DENTAL DEPARTMENT.

President.
J. B. ANGELL, L.L.D.
Principles and Practice of Operative Dentistry.
J. TAFT, M.D., D.D.S.
Anatomy and Physiology.
CORYDON L. FORD, M.D., D.D.S.
Lectures on Oral Pathology and Dentistry.
J. N. MARTIN, Ph.M., M.D.
Clinical Dentistry.
J. A. WATLING, D.D.S.
Prothestic Dentistry.

W. H. Dorrance, D.D.S.
Demonstrator of Clinical Dentistry.
Miss E. A. Nallock, D.D.S.
Demonstrator of Prosthetic Dentistry.

Special instructions will be given in Dental Pathology, Oral Surgery, Dental Therapeutics, and diseases of Women and Children, with reference to the teeth.

Students should be promptly present at the College on Thursday, September 30th, to make the preliminary arrangements for entering upon regular work.

CONDITIONS OF GRADUATION.

The candidate must be twenty-one years of age. He must furnish evidence of good moral character.

He must devote three years to the study of his profession. He must attend two full courses of lectures in the Dental College, or one course in some College having an equal standard of requirements and the last one here, and we recommend that he attend three courses regularly.

He must sustain an examination satisfactory to the Faculty in all the branches taught.

FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows :—

Residents of Michigan.—Matriculation, 10.00 dols. ; Annual dues, 25.00 dols.

Non-Residents.—Matriculation, 25.00 dols. ; Annual dues, 35.00 dols.

Graduation Fee.—For all alike, 10.00 dols. The admission fee is paid but once, and entitles the student to the privilege of permanent membership in any department of the University. The annual due is paid the first year and every year thereafter while at the University.

For further particulars, address the Dean of the Dental College, Ann-Arbor, Mich.—J. Taft, Dean.

IV.—SCIENTIFIC ASSOCIATIONS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN
40, LEICESTER SQUARE.

Officers for 1888.
President—Daniel Corbett.
Vice Presidents.

Resident.
S. J. Hutchinson.
J. H. Mummery.
W. F. Forsyth.

Non-Resident.
Richard Rogers (Cheltenham).
G. C. McAdam (Hereford).

Treasurer—Thos. A. Rogers.
Librarian—Felix Weiss.
Curator—Storer Bennett.
Editor of the Transactions—Frederick Canton.

Honorary Secretaries.
Willoughby Weiss (Council).
C. J. Boyd Wallis (Society).
E. G. Betts (for foreign correspondence).

Councillors.

Resident.
J. F. Corbett.
Sir Edwin Saunders.
John Fairbank.
David Hepburn.
Ashley W. Barrett.
R. H. Woodhouse.
W. Coffin.

Non-Resident.
Thos. Gladys.
F. H. Balkwill (Plymouth).
George Brunton (Leeds).
E. Apperley (Stroud).
J. H. Redman (Brighton).
Cornelius Wheeley.

EXTRACTS FROM THE BYE-LAWS.

Objects and Constitution of the Society.

This Society is instituted for the encouragement and diffusion of knowledge in Dental Surgery, and for the promotion of intercourse among members of the Dental Profession.

The Society shall consist of resident, non-resident, corresponding, and honorary members.*

1. The resident members shall consist of gentlemen practising as Dental Surgeons in London or within ten miles of General Post Office, St. Martin's-le-Grand.
2. The non-resident members shall consist of gentlemen practising as Dental Surgeons, residing beyond ten miles from London.
3. The corresponding members shall consist of distinguished gentlemen practising as Dental Surgeons residing in the Colonies of Great Britain or foreign countries.
4. The honorary members shall consist of distinguished practitioners of Dental Surgery who have retired from practice, of distinguished medical practitioners, and of gentlemen distinguished in any department of science.

Persons who advertise in the public journals, or by circular, either their profession or their professional attainments or public appointments, or anything relating to their mode of practice or charges, or who expose for public inspection specimens of operative or mechanical Dentistry, or conduct their practice in any way which in the opinion of the Council of this Society, is derogatory to the respectability of the profession, shall not be considered eligible for nomination as members.

No person being the proprietor of a secret remedy, or holding a patent relating to the requirements of Dental practice, shall be a member of this Society.

Election and Admission of Resident and Non-Resident Members.

Recommendations for resident members shall be signed by two members from personal knowledge, and by two or more from general knowledge. Recommendations for non-resident members may be signed by one member only from personal knowledge, and by two or more from general knowledge.

All recommendations for resident or non-resident members shall be submitted to, and approved of, by the Council, before being proposed to the Society for ballot.

Contributions of Members.

Every person elected a resident member shall pay three guineas as an admission fee, and an annual subscription of two guineas, *in advance.*

Every person elected a non-resident member shall pay two guineas as an admission fee and an annual subscription of one guinea in advance.

The entrance fees and first annual subscriptions shall be paid on admission, and the subsequent annual subscriptions in the month of November in each year; but new members proposed at or after the annual meeting, shall not be required to pay any subscription for the current session.

Ordinary Meeting.

The Ordinary meetings of the Society shall be held on the first Monday in each month, from November to June, both inclusive, at 8 p.m. precisely, except in the month of January.

Each member may introduce two visitors' at these meetings, on writing the visitor's names in a book to be kept for that purpose. The same visitors will not be admitted more than three times during one season.

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* The following bye-law has come into force: "That on and after November 1st, 1882, candidates for the Resident, Non-Resident, or Corresponding Membership of the Society, shall not be eligible unless they practise as Dental Surgeons, or are interested in the progress of Dental Surgery, and are also Licentiates in Dental Surgery, or qualified Practitioners of Medicine or Surgery; or possess such a Diploma or Degree as, in the opinion of the Council, will qualify them for the Membership of the Society."

Annual General Meeting.

The annual general meeting of the Society for the election of the officers and councillors, &c., shall be held on the evening of the second Monday in January every year.

Society's Transactions

The Transactions of the Society, under the designation of "Transactions of the Odontological Society of Great Britain," shall be printed at such times and in such manner as the Council shall direct.

The "Transactions' shall be presented to all resident and non-resident members of the Society who have paid their annual subscriptions.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

30, CHAMBERS STREET, EDINBURGH.

President—W. H. WILLIAMSON, M.D., L.D.S., D.D.S.

Vice-Presidents.

MALCOLM MACGREGOR, L.D.S., Edin.	J. MOORE LIPSCOMB, L.D.S., Eng.

Treasurer—G. W. WATSON, L.D.S., Edin.

Secretary—JOHN S. AMOORE, L.D.S., Eng.

Curator and Librarian—J. STEWART DURWARD, L.D.S., Edin.

Council.

W. BOWMAN MACLEOD, L.D.S., Edin.	WALTER CAMPBELL, L.D.S., Eng
JAMES MACKINTOSH, ESQ.	REES PRICE, L.D.S., Eng.

Ordinary Meetings.—The Society meets on the second Thursdays of January, February, March, April, and May.

EXTRACTS FROM THE CONSTITUTION AND LAWS.

Name and Objects.

The Society shall be named the "Odonto-Chirurgical Society," and shall have for its objects the Promotion and Diffusion of Knowledge in matters connected with Dental Surgery; the furtherance of communications on such subjects by Members of the Society; and otherwise to advance the interests of Dental Surgery as a branch of medicine.

Ordinary and Honorary Members.

The Society shall consist of Ordinary, Honorary, and Corresponding Members:

The Ordinary Members shall consist of Gentlemen practising as Dentists in Great Britain, and of Medical and Surgical Practitioners interested in Dental Surgery.

The Honorary and Corresponding Members shall consist of Gentlemen practising Dentistry in Great Britain, in the Colonies, or in Foreign Countries, and of retired Dental Practitioners in Britain, as well as such Medical or generally Scientific men as may have distinguised themselves in connection with Dental Surgery.

The Ordinary Members shall have vested in them the Government of the Society, and all cases not otherwise specified shall be decided by them by a majority of votes by ballot if required.

Obligations of Members.

No Member shall be permitted to advertise his profession, his modes of practice, or his charges, either in the public journals or by circular. They shall not be permitted to expose specimens of their work for public inspection, nor to carry on their practice in connection with any other business, nor to hold any patent relating to Dental practice, nor to conduct themselves in any way which the Society may consider derogatory to the Profession, so long as they continue Members of the Society. But Members who practise in towns other than that in which they reside shall be allowed to intimate their visits; such intimations being subject to the approval of the Council.

Applications for Membership.

Candidates for admission as Members of the Society shall be recommended by an Ordinary Member, and the recommendation seconded by another. After being approved by the Council, such recommendation shall be read to the Society at an Ordinary Meeting, and shall lie over to the next, when the Candidate shall be balloted for, when two-thirds of the Members present must be in his favour to secure his election.

Contributions.

Ordinary Members residing within a ten-mile radius of the City shall pay an Entrance Fee of One Guinea, and One Guinea of an Annual Subscription in advance. All other Ordinary Members shall pay an Entrance Fee of One Guinea, and Ten Shillings and Sixpence of an Annual Subscription. All Annual Subscriptions to date from the 1st March preceding the Candidate's admission.

THE BRITISH DENTAL ASSOCIATION.

(*Incorporated June 3rd*, 1880.)

40, LEICESTER SQUARE, LONDON.

President—Daniel Corbett, M.R.C.S., L.D.S., Eng.
President-Elect—S. Lee Rymer, L.D.S., Eng.
Treasurer—Fredk. Canton, M.R.C.S., L.R.C.P., L.S.A., L.D.S., Eng.

Representative Board.

President—J. Smith Turner, M.R.C.S., L.D.S., Eng.
Vice-President—Felix Weiss, L.D.S., Eng.

For London.

G. W. Parkinson, M.R.C.S., L.D.S., Eng.
J. H. Mummery, M.R.C.S., L.D.S., Eng.
Sir John Tomes, F.R.S., F.R.C.S., L.D.S., Eng.
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The objects for which the Association is established are the promotion of Dental and the allied sciences, and the maintenance of the honour and the interests of the Dental profession by

"The Periodical meetings of the Members of the Association and of the Dental profession generally, in different parts of the country.

"The publication of a periodical journal, and by

"The maintenance of the spirit and provisions of the Dentists' Act, by such lawful means as may be necessary, &c., &c."

Extract from Bye-Laws.

A person who is registered in the Dentists' Register shall be eligible for election as a member of the Association, provided that he be of good character; that he does not conduct his practice by means of the exhibition of Dental specimens, appliances, or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars, describing modes of practice, or patented or secret processes; or by the publication of his scale of professional charges.

Any registered practitioner not disqualified by any Bye-law, who shall be recommended as eligible by any three Members of the Association (the recommendation of one being from personal knowledge), and who has signed the appended form of application for admission and agreement as to terms of Membership, may be elected a Member by the Representative Board or by a committee appointed for that purpose by that Board, or by the Council of a recognised Branch.

The subscription is One Guinea per annum, and each member is entitled to a copy of the Journal of the Association monthly, and to attend the Annual Meetings of the Association.

Forms of application for membership may be had of the Hon. Sec., 40, Leicester Square, London, W.C.

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Any Dental practitioner who can subscribe to the conditions laid down in Bye-law 4, who has been recommended as eligible by any three members of this Branch, may be elected a Member by the Council, and shall be admitted a Member of the British Dental Association.

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Composed of Members of the British Dental Association who reside in the Midland and North-Western Counties of England, and of Associates who can fulfil the conditions laid down in the Bye-laws. The Annual Meeting takes place in April.

Extract from Bye-laws.

2. The Association shall consist of Members and Associates. No one shall be eligible for membership who is not already a member of the British Dental Association. Any registered Practitioner of good character, who does not conduct his practice by means of the exhibition of Dental specimens, appliances or apparatus in an open shop, or in a window, or in a show-case exposed to public inspection; or by means of public advertisements or circulars describing modes of practice: or patented or secret processes; or by the publication of his professional charges, may be admitted as an Associate. Associates shall be entitled to all the privileges of the Branch Association, but shall not be entitled to vote or hold office therein.

3. Any Member of the British Dental Association may be elected a Member of the Branch by the Council of the Branch, at any of their Ordinary Meetings, on his sending a written application for election to the Secretary of the Branch.

4. Any registered Practitioner who can subscribe to the conditions laid down in Bye-law 2, and who shall be recommended as eligible by any three Members or Associates, may be elected an Associate by the Council, on his forwarding the recommendation and his subscription to the Honorary Secretary of the Branch.

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The object of the Society is the consideration of matters generally and specially appertaining to Dentistry. The affairs of the Society are managed by a Council consisting of a President, two Vice-Presidents, Treasurer, two Secretaries, Curator, and nine other members. The President is chosen from the past Students who have obtained their degree of L.D.S.; the Vice-Presidents from past Students with or without qualification.

Any gentleman wishing to become a member, must be proposed and seconded at one meeting, and be balotted for the next; one black ball in four to exclude. The entrance fee for ordinary members is half-a-crown, and there is an annual subscription of the same amount.

Ordinary meetings are held at 7 p.m. on the second Monday in every month, from October to March inclusive. The annual meeting for the election of officers and other business is held in January of each year.

Every member has the power of introducing one visitor, not being a Student of the Hospital or School, to the evening meetings, with the consent of the President. Visitors are allowed to take part in the discussion of the papers and clinical cases.

There is a Library in connection with the Society, the Curator discharging the duty of Librarian.

The Council offer a prize, value £3 3s., at the end of each year, for the best paper read before the Society during that year.

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This Society, which was established March 15, 1878, was constituted for the encouragement and diffusion of knowledge in Dental Science, and for the promotion of intercourse among its Members; and all Students of Dental Science are eligible for Membership. All Candidates for Membership must be approved by the council before being proposed to the Society for election. The Entrance Fee is 2s. 6d., and the Annual Subscription 2s. 6d., to be paid in advance. The Ordinary Meetings of the Society are held on the first Friday in each month, from October to June, both inclusive, at 8 p.m. precisely. Each Member may introduce two visitors, not being Students of the Hospital or College, but the same visitors may not be admitted more than three times during one Session.

British Journal of Dental Science.

No. 497. LONDON, OCT. 1, 1888. Vol. XXXI.

TREATMENT OF DEAD TEETH.

By J. E. Cummings, D.D.S., M.D.S.
Formerly Demonstrator of Operative Dentistry in the Minnesota Hospital College, Dental Department.

The subject of preservation of diseased teeth has of late been receiving a great deal of attention in most of our dental journals all over the country, in some form or other, from the immediate treatment to cases that are allowed to go for weeks before being pronounced cured. Although at the present time, we are not hearing so much of the immediate filling as of yore, I think some of our operators fail to use judgment in discriminating between the cases that would show a fair percentage of success and of those that were most certain to fail.

This treatment is one of great interest to all of us in that we may learn the pathology of all cases that come before us, and it is one that requires a great amount of study and observation in our plans of treatment that we may report our failures and successes to the profession at large. I look around me in the journals and see a great many new drugs coming to the rescue, in all our treating cases, and I wonder if all these drugs are bringing any more success to their advocates than the simple drugs I am using at the present time, and I say *No*, it cannot be so, for surely success seems to be perched upon the foremast of my professional ship, and I say, observation and old and well tried remedies are working wonders.

Surely a great many new and valuable remedies have been brought before the profession, within the last few years, some of our best disinfectants, and germicides. We have a great deal to be thankful for, but I think the natural desire to crave for something new has come to all of us to a greater or less extent, and we receive with open arms all, or almost all, the remedies with the hope we have found the panacea for every dental trouble, and we shall not be obliged to work quite so hard over the stubborn cases of our practice, but then we must not forget the old saying "nothing is worth having that is not worth working for," and nothing cheers the heart of a true student more than some difficult point in study or work, that he has overcome by his own toil and observation, for certainly our student days are not expected to stop when we leave our *alma mater* but continue in the good way of working upward, and onward, to the plains where we can rest and look back with pride, over our past professional career and say, It is well. We have done all in our power in building up a profession that well deserves men of a high and noble rank. How great was the reception of cocaine when it was brought to the notice of the profession. It was thought to fill the long felt want of an obtunder and local anæsthetic, but where, oh where is it now? This is but one example of the rise and fall of new drugs. Please don't misunderstand me, I am not one of the kind to plod along in the old rut of daily practice. Not so, for I glory in our success as a profession and rejoice that I can be numbered among those who are known as Doctors of Dental Surgery.

Let me now describe my plan of treating pulpless teeth, the plan is simple and effective, and these are two of the great points we are all looking for,—simplicity, and success. We all know how great the percentage of cases is that come under our care suffering from toothache, and those that are in need of more or less treatment, and it often turns out they are in need of more than of those that need a small amount of treating.

After properly removing all decayed portions, and weakened walls, and making certain of a free and direct access to the pulp, our first point is to see what condition the nerve is in. If we find any life, our first duty to the patients is to relieve them of all pain, and this can be done by one application of arsenic and iodoform, equal parts, on a small pellet of cotton, and allowed to remain for about forty-eight hours, and at the same time the iodoform places the canal in an antiseptic condition. Great care should be taken not to force any debris into the pulp cavity, and thence into the canal, as sometimes a little carelessness causes a great amount of trouble which is very unpleasant to both patient and operator. If we have all the loose particles removed, and a free opening to the pulp cavity we can now make an application of carbolic acid and iodoform paste, (iodoform paste being a mixture of iodoform powder and oil of cinnamon, a very pleasant and agreeable combination for the operating room), and allowed it to remain in the cavity for about three, or four days, after which time in most cases, we shall be able to remove most, if not all of the nerve to the apex of the canal.

If there seems to be any trouble about the nerve breaking in small pieces, a drop of myrrh (tincture) will be of great benefit, and seems to mummify the nerve so that in nearly every case it can be removed in one piece in perfect condition. I now allow a few fibres of cotton saturated with peroxide of hydrogen, to remain in the canal for a few minutes, and if there seems to be no effervescence I proceed at once to fill the canal permanently. After syringing freely with tepid water, I dry out the canal with bibulous paper rolls, and warm air. I introduce a small twist of cotton about a quarter of an inch long, saturated with carbolic acid and iodoform paste, which serves as a protection to prevent any material from being forced through the apical foramen. I use force to crowd it in solid, and then use the drying process again. I proceed to finish by filling the remaining part of the canal with a point of gutta percha warmed, and moistened either with chloroform, or chloro-percha, and using a fair amount of force to make it a solid filling. The operation can be finished at once if any of the plastic fillings are to be used, but if gold is the material decided upon, the floor of the cavity should be covered by the oxyphosphate cement, and allowed to harden, and in this way we secure a good solid foundation, and we should in all cases avoid packing gold on any substance that has a springing nature as gutta percha, &c. The cotton twist may vary from one eighth to a quarter of an inch in size, losing the large twist for small canals and foramina, it can be pressed in good and solid and last for years, and it will also preserve health to the surrounding parts. This plan though simple is very effectual, and one that has stood the test of time, when properly performed. The writer has one of his own molars filled in the same way that has been doing good service for ten years. Please let me impress you with the plan of having a free and direct opening to the nerve canal, so that there will be no difficulty in removing the nerve ; and also that our medicines may begin their mission at once, for neglect of this one point I consider causes a large amount of failure, this makes many patients become discouraged, they tell how long they have been obliged to visit the dentist, and after a while they think there is no hope for their case, and they visit some Cheap John to have the offending tooth extracted.

A STATISTICAL ENQUIRY AS TO THE RESULTS OF THE IMMEDIATE TREATMENT OF PULPLESS AND ABSCESSED TEETH.

By G. Cunningham, B.A., D.M.D. (Harv.), L.D.S. (Eng.)

(*Continued from page* 842.)

Most of those who have written on the subject have attempted to describe the limits within which the operation is applicable, each subsequent writer usually advocating a wider field of application according to the condition of the tooth, until at last the only limits recognised were constitutional conditions; for instance, Dr. Ottofy lays great stress upon his statement that the operation should not be attempted in the cases of patients of lymphatic, anæmic or otherwise sluggish constitutions, but only for robust and healthy persons. Emboldened by the success in even what seemed the most unfavourable cases, both with regard to individual teeth and to individual constitutions, and, with a view to determining the advisable limitation of its application, I have for some years employed it universally in all classes of pulpless and abscessed teeth, and with the result that the majority of those teeth or roots for which extraction was the only remedy are now saved and performing efficient service. It is quite possible that the treatment has thus been pushed too far, but even the most thorough and careful examination of minutely recorded cases had not indicated with any certainty the exact degree of limitation, though I think it indicates the line in which further investigation should be directed. The minuteness of the record and the complication of the tabulations may possibly lay me open to the charge of being too diffuse; but until a more accurate knowledge is obtained of the actual conditions in a region, which the eye of man cannot possibly reach, I trust to be absolved from such a charge

The method adopted throughout the cases recorded and tabulated may be briefly described as consisting of the following steps. First, as far as possible free and direct access to all roots was obtained. From the ease and certainty with which the lost tissue may be replaced, bold excavation of the crown in the requisite direction has been freely adopted. Secondly, the rubber-dam has been employed in every case where its adjustment was possible. Thirdly, the root canals were freely reamed out with nerve drills in the dental engine as far towards the apex as was deemed safe or necessary. (The "Morey" flame-headed drill, as supplied by the inventor himself, is superior to all the others, I have tried.) In all cases where there was the slightest suspicion of putrid infection of the dentine every effort has been made to remove it, but canals into which a small nerve broach would not readily pass have been left unfilled. Some dental practitioners, as may be gathered from their own statements, perform this operation perfectly, but a greater number cannot attain this too often paraded perfection. I belong to the latter category; and, so that you may form some idea of the imperfections of my operations, I have copied, upon a diagram, the mode in which a record is kept of the extent to which the root or roots of each tooth were filled. Fourthly, injection or application was made of some such medicaments as, first, a one per cent. solution of arsenious acid in glycerine, or, secondly, a similar one of mercuric chloride. Where it was deemed inadvisable or impossible to entirely remove the infected dentine by excision, chloroform was occasionally used as an effective cleanser. The selection and preparation of instruments and materials for the next process allows a certain time for the dressing to soak into the surrounding tissue if it can do so. Fifthly, the material employed for filling the roots was almost invariably zinc oxychloride, slight shreds of cotton wool wrapped on a plain nerve broach, being used when necessary to carry one material, as far as possible, into the finest parts of the canals, which were purposely left wet in order to facilitate penetration of the filling material. Sixthly, the crown cavity was then treated in the usual way, and latterly whenever time permitted with a permanent filling such as gold or amalgam. In cases where roots only existed it was usually necessary to defer the operation of crowning to a later but not always distant sitting.

In preparing my communication on the immediate method of root-filling for the International Medical Congress I had tabulated under these heads exact copies of the everyday record of each and every case as it came under notice. A general summary of that statistical inquiry is presented in Table A.

TABLE A.—*Statistics of the Curability of Pulpless and Abscessed Teeth by the Dressing and the Immediate Methods*, 1882-7.

	Total Number of Cases.		Percentage.	
	Dressing.	Immediate.	Dressing.	Immediate.
All root canals cleansed, treated antiseptically and filled with oxychloride of zinc (*in most cases*) ...	122	521	190	100
Cases requiring subsequent treatment:—				
1. For slight periostitis ...	36	3	29·5	1·15
2. For swelling or abscess	32	5	26·2	0·27
3. By extraction* ...	6	3	4·91	0·58

It must be distinctly understood that I do not ask these figures or percentages to be taken as absolutely exact, but I do claim that since they were calculated from tables in which both methods had been recorded with equal faithfulness, and under precisely similar conditions, that they fully represent the *relative* advantages of these two distinct methods of treatment.

Conscious as I am of the incompleteness of this record in some respects, I have deemed it better to call your attention in this paper more especially to a series of statistics based entirely on cases treated and recorded since the preparation of my first paper, and therefore any apparent discrepancy between the earlier and recent tabulations must be ascribed to the increased minuteness of the records, rather than to any essential difference in the results.

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* These figures do not include all the extractions under either method as no doubt others were extracted by other hands, but the results are fairly comparable since the conditions were identical in both periods.

The cases in which immediate root-filling is applicable may be classified and profitably discussed under three distinct and easily distinguishable conditions, viz. :—

Class I.—Those cases where the pulp is removed by extirpation or by devitalization.

Class II.—Those cases where a fistulous opening indicates with certainty the presence of an apical abscess.

Class III.—Those cases where the pulp is dead without an actual or obtainable sinus—*i.e.*, all cases not belonging to Classes I and II.

Class I.—The first class of pulpless teeth tabulated consists of all those permanent teeth where the pulp was devitalized by immediate extirpation or by cauterization.

Table C. contains the details of 34 teeth, in which the pulp was devitalized by immediate extirpation in 11 cases, and by cauterization in 23 cases. The cauterizing agent in fully half the cases was the S.S.W. devitalizing nerve fibre, while in the remainder it was the ordinary application of arsenious acid. Dr. Truman, of Philadelphia, has recommended the addition to the arsenious acid of an equal bulk of iodoform* as an absolute preventive of the pain which so frequently accompanies devitalization. Though following his instructions closely, the cases in which we tried the combination did not entirely corroborate his contention.

Previous Pericementitis.—Previous to the commencement of treatment, pericementitis was noted as being present in 6 cases, and was therefore absent in 28 cases. Cauterization was followed by pericementitis, usually slight, though persisting for a considerable time. Of the 23 cases treated by a devitalizing medicament, the pericementum was already inflamed in 4 cases, and on examining the 19 remaining cases we find that a subsequent inflammation occurred in 5 cases.

The slight nature of the inflammation may be noticed from the fact of its being noted as continuing in 5 cases out of the 11 cases of previous pericementitis ascribable to an extension of the pulp inflammation and to the results of cauterization.

Subsequent Pericementitis.—23 cases were uncomplicated by association with any previous inflammatory conditions, and the record shows that in only one of these was there any subsequent pericementitis. This case (No. 30) was of an acute nature, and passed out of my hands into those of a

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* "Cosmos," Vol. XXIX, No. 11.

London practitioner, who did not refer the case back to me, or even communicate with me to ascertain the conditions with which he was dealing. I fear, however, it can only be ascribed to the dental perforation of the root, which I noted as having possibly occurred.

Perforations.—The other cases of perforation, 3 of which were lateral, give rise to no noticeable symptoms.

Permanent Crown fillings.—Of the 34 teeth so treated, permanent crown fillings were inserted in 26. Of 15 cases under my own care 10 were thus permanently treated, thus giving a percentage of 66·6.

Rubber-dam.—The rubber-dam was employed in 33 out of the 34 cases.

CLASS II.—The second class consists of abscessed teeth, since it only included all those teeth where there was already a fistulous opening on the gum, or one obtainable by lancing, indicating the presence of an apical abscess. In the treatment of these undoubtedly abscessed teeth no effort was made to pump any medicament through the end of the root into the apical space, and so through the fistulous opening. Such an injection might have occurred inadvertently in the few cases where the root opening was large, as blood was occasionally drawn. Nor were any special efforts made by enlarging the apical foramen to bring about such a blood-drawing, as is recommended by some practitioners in all cases of long standing. In some cases a portion of the liquid oxychloride of zinc had evidently passed beyond the apex, and seemed to facilitate, rather than otherwise, the closure of the fistulous tract. Many of these cases were undoubtedly of very long standing, and the most obstinate in yielding to treatment were those for which rhizodontrophy had been performed, or where the roots had been filled with cotton-wool dressings which had become foul.

No special application of medicaments was made to the abscess sac through the fistulous opening, except in two or three cases which did not appear to be healing rapidly, and where it was thought possible that the case was complicated by some considerable alteration of the root or of the subjacent bone. Aromatic sulphuric acid, mercuric bichloride, (1 in 1000), or hydrogen peroxide have been employed in such cases with success. A delay in the usual readiness of these cases to heal may be sometimes owing to some impairment of the general health of the individual. As a general rule, however, the mere removal of the original exciting cause, with the subsequent occlusion of the pulp canal, is quite sufficient to lead to a removal of the suppurative discharge and the closure of the fistula within a few days.

Dry Contents.—Of the 21 cases belonging to this class, it was observed that the pulp canal contents were dry in 5 cases, a putrid odour usually most marked being present.

Moist Contents.—Of the 12 cases in which the contents were classified as belonging to the moist variety, 2 were associated with pus only. The 10 purely moist cases were most usually associated with an extremely putrid odour; in 4 cases the nature of the contents was not noted.

Fistula prior and subsequent to operation.—The condition of the fistulous opening before the operation in these 21 cases was noted as follows:—2 closed, 17 patent or discharging, and 2 artificial.

With regard to the condition of the fistulous opening after the operation, we have had the opportunity of noting the subsequent effects in 16 cases. Of these 16 fistulous openings 15 are closed. In one case (No. 10) the fistulous opening was found still patent at the end of three months. The fistula was noted as closing in from one to fourteen days, though frequently we had not an opportunity of observing the fact for from one to two months.

Subsequent Pericementitis.—In two of these cases in this class slight inflammation followed the operation. Only two cases (Nos. 12 and 20) were followed by acute inflammation, one of which may have been due to the perforation at the bifurcation of the roots owing to extensive decay.

Permanent Crown Filling.—Of these 21 teeth, 13 were immediately and permanently occluded with a metalic stopping. Of these 21 cases I operated on 13 teeth, inserting 4 gold and 4 amalgam fillings with one crown equal to 69 per cent. (immediate permanent filling).

Rubber dam.—The rubber-dam was applied in 18 cases out of 21 cases.

A careful perusal of the column of remarks shows that this class of case is very largely the result of previous operative treatment. From the frequency with which old amalgam fillings have been removed, displaying an obvious and evidently disregarded exposure of the pulp cavity, and often actually extending into the orifice of the unfilled pulp canals, it is evident that there is one kind of immediate treatment which cannot be too strongly condemned. It should also be noticed that one case gave evidence to the fact that rhizodontrophy had neither prevented nor cured the formation of alveolar abscess with a fistulous opening, nor is that operation, in my opinion, unassociated with the fact that that very fistula was still open at the end of three months.

CLASS III.—We have now to consider the most important division of our subject, namely, that large class of teeth in which the pulp has been dead for some time, and which are unaccompanied by any visible evidence of external opening through the alveolus. This division must necessarily include a considerable variety of pathological conditions of the pericementum and the structures in the immediate neighbourhood of the apical space, and compromising many instances of undeveloped alveolar abscess. In Dr. Harlan's paper,* he seems only to recognise two possible conditions under this head, either of which is always present, namely, the encystment of the apex or a dormant or cold abscess. It is difficult to admit that these exhaust the list of all possible conditions, nor can we follow him in the statement that the differential diagnosis of these two conditions is generally easy. Unfortunately the diagnostic features on which he relies are not noted in my present record, but they furnish a suggestion for further research, especially where a frequent opportunity exists for examination of teeth, so affected, after extraction. As far as I can judge, both his subdivisions seem to coincide with the tabulation which I have made according to the description of the condition of the pulp canal contents under the respective headings of "Dry" and "Moist." Without inquiring into the question whether or not he is justified in identifying what is more usually described as dry conditions of the pulp, to be necessarily associated with encystment of the apex, it is important to note for our present purpose that he considers immediate root-filling appropriate treatment in all cases where pulpless teeth are free from tenderness on mastication, when unaffected by thermal change, when the canals are dry, and there is absence of odour—all indicative, according to him, of encystment. As you will have an opportunity of comparing the relative results of immediate treatment in cases of both dry and moist conditions of the pulp you will be able to form an opinion as to how far he is justified in his condemnation of the treatment practised by "immediate and indiscriminate root-fillers" of teeth falling under his second subdivision.

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* Trans. Vol. XX, p. 195.

The total number of teeth which have been specially noted as falling under this class amounts to sixty; but unfortunately only in two-thirds of the cases had the character of the pulp canal contents been specially noted. In 39 cases, it was found that the contents were dry in 15 and moist in 24. Of these 24 moist cases, 18 were cases of moist conditions of the pulp unaccompanied by any pus formation in the root canals, while in 6 cases pus occupied the whole or part of the channel.

Dry Contents.—In the 15 cases where the contents of the pulp canals were dry, two cases were noted as being affected with pericementitis *before* the operation; one only slightly, and the other considerably. Both inflammations rapidly subsided without any special treatment. In the remaining 13 cases no pericementitis occurred after the operation, though in several cases the pulp contents gave evidence of the presence of a putrid odour.

Moist Contents.—A moist condition of the pulp canal contents was always associated with a putrid odour, occasionally to a very marked degree. An examination of the 18 cases where no pus was observed in the canal, shows that 5 were associated with previous pericementitis. Of these, 4 cases subsided rapidly after the operation, one only leading to an increase of pain on the following day. The remaining case led to an increase of pain, which did not subside until the eighth day.

Of the other 13 cases which were unassociated with pericementitis before the operation, only one was followed with a slight inflammation which lasted about twenty-four hours. Another one of these 13 cases, however, was followed by severe pain, but will be better discussed under another heading, since the treatment was complicated by an accidental perforation of the root, which may possibly have been the cause of the inflammation.

Of the 6 cases in which pus was present in greater or less amount, we find that 4 had given rise to considerable pericementitis before treatment, while 2 of them were also accompanied by considerable swelling; yet, with the exception of one, all these cases responded rapidly to the effects of the operation. In this solitary case the left lower molar was furnished with a futile arrangement for drainage upward. The pain which had been present before the operation decreased at once after the immediate treatment, but the swelling increased until the fifth day and only subsided by the tenth day. The termination of this acute inflammation was by resolution, not suppuration. Of the two cases in which previous pericementitis was absent, one was followed by considerable inflammation and swelling. It will be noticed that in this case the discharge was noted as being thin, watery, and putrefactive, indicative of chronic suppuration. It is quite possible that many will regard this kind of case as one in which better results would have followed the employment of the dressing method, but from a considerable experience of other similar cases which have done well and stood the test of time, I am not at all convinced that that view is necessarily correct; principally since it is a question, first, whether such an inflammation can always be avoided with certainty by any method in all conditions of the general constitution, and, secondly, whether in the cure of such a case as this the chronic suppuration is not more effectually disposed of by a sharp attack of acute inflammation than by any other method.

In four of the cases it is worth observing that large deposits of secondary dentine were noted as occupying the pulp cavity, and were associated with great putridity and moisture of the pulp canal contents or with the presence of pus. We have also observed this condition in many other instances, without, however, having made any special record of it in the case-book.

Previous Pericementitis.—By observing and recording the presence or absence of pericementitis before the commencement of the operation a new light is thrown upon this class of case. The tabulation shows that of the 60 teeth presented, 15 of them were more or less affected with pericementitis, that is, exactly 25 per cent. Of these 15 cases one was slight, while the others were considerable or acute, and usually of two or three days' standing. The more acute condition of the two cases was indicated by the presence of considerable swelling. So far as the root-filling was concerned, these cases were treated exactly as the others, with the result that immediate relief or rapid subsidence of the disease took place in 10 cases. In 4 cases there was immediate decrease of the pain and entire subsidence of the symptoms in from four to ten days. In one case, however, it was noted that the pain was more acute on the day following the operation, after which all the symptoms subsided with tolerable rapidity. In every case the inflammation, whether slight or acute, terminated by resolution, and not by suppuration, or with the formation of a natural or artificial fistulous opening.

CONTRIBUTION TO THE HISTORY OF THE OPERATIVE TREATMENT OF EMPYEMA OF THE ANTRUM OF HIGHMORE ACCORDING TO PROFESSOR MIKULICZ'S METHOD.

By IGNATIUS LINK, Regimental Surgeon in Lembery.

F. P., a strongly built woman of 38, about a year ago, began as a result of a carious tooth in the left upper jaw, to suffer from constantly increasing, dull, expansive, and at times, tearing pains in the left upper jaw, without there being any visible swelling of the bone. As the pain appeared to proceed from the carious tooth,—the left upper wisdom,—she had it removed and noticed that from that day forth pus constantly poured from the empty socket.

Though the pain in the upper jaw abated very much after the removal of the tooth, the patient was considerably annoyed by the persistent flow of pus from the tooth socket which had become converted into a fistula. She applied to a medical man, who syringed out the fistula every day for two months, but without any good result. She determined to seek further advice away from home and applied to me. The most careful examination revealed no swelling of the upper jaw, but at the site of the upper left wisdom tooth I found a fistula opening directly into the antrum. In order to obtain further information as to the contents, I dilated the fistula by means of a small pair of forceps, when a considerable quantity of sebaceous-looking matter poured out into the mouth. I then introduced a female catheter into the dilated fistula, and through this I washed out the cavity with a 3 per cent. solution of salicylic acid, whereupon a further considerable quantity of this pasty foul-smelling matter came away partly through the mouth, but partly also through the left nostril. Though the communication with the mouth appeared to be now positively established, I nevertheless determined to make the nose communicate with the antrum in order to allow of a free exit for the secretions, and also to try and cure the unnatural and disagreeable opening into the mouth. For this purpose, the patient being under chloroform, at once I proceeded to make a considerable opening into the antrum, through the inferior nasal meatus. The cavity was now thoroughly washed out through the catheter and quantities of this same matter came away through the artificial opening. The antrum was then syringed out with a 10 per cent. emulsion of iodoform in glycerine, and the bleeding, which was rather free, was arrested by plugging. Twenty-four hours later, I removed the plug of guage, and from that date washed out the cavity every day through the opening in the nose by means of Mikulicz' balloon syringe. By the end of a week the alveolar fistula had closed and the discharge from the cavity through the nose was very much lessened. The patient soon learnt to wash out the antrum for herself and returned to her home perfectly happy in less than a fortnight after the operation. The patient writes me that at the present time, about three months since the operation, the secretion from the cavity is almost nil, so that she seldom has to wash it out now. The pain has also entirely disappeared.

The second case was that of a farmer, L. W., aged 22. He belonged to a tubercular family, and had suffered for six months previously from a nasal catarrh, with which was accompanied pretty frequently by a flow of pus mingled with blood from the right nostril. On the 5th August he had the second right upper molar tooth removed on account of its decayed condition, and of the pain it gave him ; the right cheek began to swell immediately after the extraction. Hæmorrhage from the alveolus lasted for twenty-four hours. For ten days the swelling of the cheek remained unaltered, after which time an abscess formed with all the signs of acute inflammation just below the right inner canthus and burst there, the resulting fistula gave constant issue to quantities of thick pus.

The very first time I saw the patient, four weeks ago, I came to the conclusion, judging from the swelling of the right upper jaw, that I had to deal with a case of disease of the antrum ; the history also pointed to this, especially the patient's statement that pus came away in pretty considerable quantities from the socket of the absent tooth. The examination with a probe confirmed the diagnosis, for a director passed through the outer fistula came in contact with a second one in the normal entrance to the antrum, and a third passed through the fistula in the tooth socket. I must, however, here remark that the natural aperture into the antrum was very wide, so that I was able to reach it with the greatest facility by means of a bent probe.

The examination having positively excluded the possibility of the existence of a solid tumour, I thought of a suppurative process, and therefore determined to open the diseased antrum according to Mikulicz's method. On November 26th, the patient being anæsthetised, I operated, following exactly Mikulicz's directions, and passed a probe through the wall of the antrum just below the inferior turbinated bone.

After scraping out the antrum through the external fistula by means of a sharp spoon I passed a drainage tube the thickness crow-quill, and plugged the right nostril with iodoform gauze. I may mention that at the time of the scraping out, and also the irrigation, similar masses to those described in the previous case came away. The following day (after a lapse of 24 hours) I removed the iodoform gauze and proceeded to wash out the cavity every day through the drainage tube with a solution of salicylic acid. The secretion decreased so rapidly that by the end of the sixth day I was able to remove the drainage tube, and two days later the fistula was definitely closed. From this time the washings were always made through the artificial opening and the irregular fluid has always returned perfectly clear. The swelling of the cheek has quite subsided, the deep scar at the inner angle of the eye alone remains as a trace of the former fistula; the sinus in the socket closed a few days after the operation and there is hardly any visible depression left. The patient is not troubled in any way, and rejoices in his recovery, more especially, however, in the fact that his right nostril, which had been stopped up for months past, is quite free again, and that the foul discharge from the tooth socket has quite disappeared.

He has learnt to manipulate the syringe and washes out the antrum for himself.

The above described cases afford a further proof of the usefulness and importance of Mikulicz's operation, and of the fallacy of Stoerk's opinion that the operation is a difficult and thankless process. By keeping close to the inferior meatus and then pressing with a probe against the outer wall, taking care to go neither too far forwards, nor too far backwards, it is almost impossible to fail to enter unless the bony plate is unusually thick, which seldom happens.

This method is also far simpler and more efficient than that given by Stoerk, for the search after the natural opening of the antrum is exceedingly difficult, and requires very great practice. Besides which the opening is situated far above the level of the floor of the antrum; any fluid accumulated in the cavity must, therefore, reach to the height of the opening for it to be able to run out spontaneously, and then only in part, otherwise the fluid can only flow out when the head is bent to the side. In Mikulicz's operation, however, the opening is made quite close to the floor, and in this way the secretions can come away spontaneously, or by bending the head forwards.

In the second case we saw that notwithstanding the fact that the natural opening into the antrum was abnormally wide, the secretion collected there, and finally gave rise to a fistula in the cheek, and also that this fistula entirely closed a few days after the operation, a result which could not have been obtained by any other process. Stoerk is evidently quite in the wrong, therefore, when he calls Mikulicz's operation nothing but the "bursting open of an open door."

In conclusion, I may be allowed to draw attention to a method of examination in the exploration of the antrum, which to my knowledge has never been used by anyone,—I mean percussion. Repeated experiments on both healthy and diseased persons, whom I had placed in a proper position have led me to the following conclusions: If you place a cylindrical piece of wood, about a finger long, with one end on the hard palate, exactly over the second molar, and then percuss the free end with the finger, you will obtain a full and clear sound if the antrum is empty, but a dull sound if the cavity be filled with water. The closure of the corresponding nostril does not alter the percussion note.

Percussion of the antrum alone is thus sufficient to enable us to make out whether the cavity is empty, or whether it is filled with fluid or a solid mass.

British Journal of Dental Science.

LONDON, OCTOBER 1st, 1888.

THE ABUSE OF HOSPITALS.

WITH the increase of enthusiasm which has during the past thirty or forty years made dentistry a profession, there has been a rapid multiplication of dental schools and hospitals where students are collected together and taught. Specialisation in hospitals, so rampant at the present time, has, perhaps, contributed towards the same end, and has even caused dental hospitals to spring up where they otherwise would have remained non-existent. The widespread popularising of hospitals due in no small degree to the pernicious effects of the Hospital Sunday and Saturday Funds and their advertising, led quite naturally to the birth and maturing of the idea that hospitals of all sorts, sizes, and conditions, are the personal property of those who contribute to their support. And as it is common for the financially minded to seek for a return for whatever money they disburse, it is not long before they make use of hospital letters for their dependents and poor relatives, and all those whom they seek to dishonour by gilded patronage and cheap philanthropy. Nor does the next step follow with any difficulty: arguing that, since it is their money which supports this or that hospital, or indeed *all* the hospitals and dispensaries of London—for did they not give half-a-crown to the Hospital Sunday Fund, and was not that Fund distributed to all the deserving curative institutions of the Metropolis ?—and being their money they consider they may seek on their own behalf the benefits of Hospitals designed for the relief of the *poor* and *needy*, and *for them alone*. Whether or no this chain of thought is in part pursued, we are not careful to enquire, the result concerns us, which is, that there are a very large number of persons admitted and relieved every year in the metropolitan hospitals who have absolutely no claim upon those institutions, and who by their acceptance of this eleemosynary aid are in point of fact embezzling the money of the charitable, and robbing the *bona fide* poor and starving of their chances of medical treatment, a pitiless and wholly contemptible theft which too often means death, and a death of torture for those poor friendless waifs whose place is in hospital. Any one familiar with the system of metropolitan hospitals will know how this malversation of charity tends to elbow the poorest and most necessitous class out of the hospitals into the gutter, or, if they are more fortunate, into the workhouse infirmary where the iron rule of parochial economists beats down the possibilities of health, and successful treatment to the last, if not to their vanishing point. Of course we offer no aspersion upon these infirmaries, their work is very good of its kind, and their medical officers do their utmost to mitigate the sufferings of the patients. In spite, however, of this the workhouse infirmaries are thronged with invalids who should, properly speaking, go to hospital, while the hospitals give harbourage to many who could well afford to pay a doctor. Special hospitals are worse sinners in this respect than are the large general hospitals, if we except those which support paywards and all their attendant evils. The accusation has been made more than once in our columns, that the large dental hospitals of London and the provinces are inflicting a great injury upon the profession by the amount of conservative work they undertake, and by the lack of any adequate supervision of the patients, who present themselves for treatment. Indeed, so great and widespread is the evil feeling engendered that we trust some fresh efforts will be made to correct this growing abuse of charity, and the consequent hardship inflicted upon the less well to do practitioners.

It is often represented that the class which really appears most capable of paying fees comprise the most impecunious; necessitous ladies who have seen better times, governesses and the retainers of wealthy houses euphemistically called "poor relations," and it is even urged, that no class of persons need more help than this one, and so they have every right to seek hospital relief. This contention we believe to be really invalid, since it is and has always been the custom to mitigate fees in favour of these ladies, and usually, if not universally, they together with the poorer clergy obtain the services of the most skilled, and are required to pay either nominal or no fees whatsoever. Nor are these the persons who throng the waiting rooms of the dental hospitals, for there we find domestic servants who are in receipt of good salaries, youths and young women in regular employ, and often earning a wage more than adequate to pay for necessities of life, and which is too often squandered upon senseless little extravagances which would hardly be considered legitimate by those whose income was many degrees more abundant. The elaborate work, gold fillings, pivoting &c., which can be obtained at hospitals by paying the actual cost of the materials, competes with the work done by the dentists in poor districts who supply the wants of the poorer classes, and competes very much to his disadvantage. When the cost of housekeeping, the payment of wear and tear and depreciation of tools, provision against sudden death or sickness, have to be set upon one side of the ledger, as items wholly unknown to the student working in the hospitals, and having his fees paid by a parent, perhaps himself a dentist, it follows that the dentist can give neither the time, the material, and often little of the skill which the patients demand. He cannot bring the skill to bear because in the first place the bloom of life has been rubbed off, and in the second with a staff of picked men each eager to secure the well-being of his school, it becomes almost impossible for bad work to come out of hospitals, the careless student has a Mentor always at his elbow ready to smooth away difficulties, and, if need be, to remove a badly fitting plug, and "demonstrate" a perfect and refined gold filling, such as would stand for fifteen or twenty years. It is all right for the hospital and a grand thing for the students that this should be so, but it becomes a very, very grave question whether the system is not one pregnant with the most lamentable misfortune for the poorer dentists, who, after all, are students to-day and must be breadwinners to-morrow. At the best, the matter merits the greatest and most earnest attention, and we venture to think—reform.

LOCAL ANÆSTHETIC EFFECTS OF HELLEBOREIN—V. Venturini and E. Gasparini, working in the laboratory of Professor Buffalini, at Siená, recently made the discovery that helleborein had a local anæsthetic effect. A communication on the subject was made on March 9th by Professor Buffalini to the Societa tra i Cultori delle Scienze Mediche, of Siena. The physiological effects of helleborein were already partly known by the experiments of Schroff, Dragendorff, Marmè, Santoliquido, and Paul. Santoliquido recently contemplated an investigation of the influence of these two glycosides on the heart. The local anæsthetic effects of these two substances, however, had been quite unknown hitherto. The following is a summary of the observations of Venturini and Gasparini: On the instillation of some drops of a solution of helleborein into the conjunctival sac of rabbits, complete anæsthesia of the cornea came on after fifteen minutes. Pricking with a needle was not felt by the animals. The same results were also obtained in experiments on dogs, without any interference with the function of the pupils or eyelids or with vision. The experiments were then repeated with a solution, each drop of which contained about 0.0005 grammes of the glycoside; the same anæsthetic effect was produced on the cornea, after an interval of fifteen minutes, when three or four drops of this strength were injected, into the eye. The cornea regained its normal sensibility in half an hour from the commencement of anæsthesia. No bad after-effects were observed on the subsequent days. Venturini and Gasparini consider that in operations on the eye, helleborein is preferable to cocaine, as its effect is limited to the cornea, and does not affect the sensibility of the other parts of the eye in any way. They conclude that : (1) Helleborein, even in a very diluted solution, produces complete anæsthesia of the cornea, without irritating the conjunctiva or the cornea. The anæsthesia produced by this substance is of longer duration than that obtained with cocaine. (2) Though the anæsthesia is complete, there is no relaxation of the eyelids. (3) No change in the pupil or in the intra-ocular tension is observed. (4) Helleborein causes local anæsthesia in the parts into which it is injected. As, however, it has a powerful cardio-toxic effect, its application to the cardiac region requires great precaution. Whether the influence of the helleborein is to be ascribed to the helleborin (as Professor Buffalini thinks) has yet to be decided.

DR. PATRICK'S METHOD OF MAKING CROWNS.—The following are formulæ of Dr. Patrick's, used by him in his method of making crowns ; Band gold—Pure gold, ½ ; coin gold, ½. Plate for cusps of crowns—Pure gold 15 parts ; platinum, 1½ parts ; to be kept at the fusing point one hour. Solder—Band gold, 89 parts ; silver, 7 parts ; copper, 4 parts. A lower grade of solder for filling the cusps of crowns is composed of solder, (the above) 89 parts ; silver, 7 parts ; copper, 4 parts.

INOCULATION OF SYPHILIS BY SALIVA.—The following revolting particulars are given by a Russian paper *The Wratch*. Among the peasantry many explain almost every affection of the eyes as due to the presence of foreign bodies between the lids, where such bodies may be retained. In order to extract them the tongue of some person is introduced between the lids and into the conjunctival sacs where the supposed foreign body is lodged. The procedure is very widespread, and, as may be readily understood, syphilis may in this way very easily be transmitted. The author describes a veritable epidemic of syphilis in the government of Wiatka. Within two months he had in his hospital eight cases of syphilis of the lids (with mucous patches, also, of the anus and genitalia). He also discovered in the neighbouring hamlets sixty-eight syphilitic cases, amounting to thirteen per cent. of all the population, one-half of whom, or thirty-four, were inoculated by the same woman.

CHLORIDE OF METHYL AS A LOCAL ANÆSTHETIC.—The cold developed by the passage of chloride of methyl from a liquid to a gaseous state was utilised some time since by a French surgeon, M. Debove, for the purpose of inducing local anæsthesia. Certain modifications have been introduced by M. Bailly, of Chambly, by which the method has been rendered much more practical and safer. Instead of freezing the part by allowing a jet of the gas from a siphon receptacle to play upon it, he saturates plugs of cotton-wool with the liquid, and places them on the spot to be operated on, or on the seat of pain. It has been found exceedingly useful in the treatment of neuralgia, sciatica, etc. To facilitate the transport of the liquid he has designed a double glass tube, the inner one containing the methyl, and the space between the two tubes being rendered a vacuum. By means of a capillary tube the anæsthesia can be directed to particular spots too small for the application of a tampon. When the latter is employed, in five or six seconds the skin becomes blanched, indurated, parchment-like, and depressed. The anæsthesia thus obtained is amply sufficient to allow of incisions, scarifications, cauterisations, etc., without sensation.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

ADDITIONAL SEPARATORS.

By S. G. Perry, D.D.S., New York, N.Y.

In designing the Perry separators efforts were made to render them adjustable to the different teeth. To make them adjustable however to a large class of teeth must render them poorly suited to a particular class, and so it was determined to abandon the attempt to make them adjustable, and to adopt the plan of fitting one for the molars, one for the bicuspids, and one for the incisors. A further trial developed the need of one for the molars and bicuspids, and the set of four was made. Many cases are however found where the bicuspids and cuspids could not be separated by any one of the set of four, and so a fifth one was designed especially for these teeth. The inside bar is made very short to suit the quick curve of the arch at this point, and the jaws are so shaped that they will slip over nearly all teeth of this class, and yet fit snugly when in position. If a case is met where the cuspids are too large for this separator, the one designed for the bicuspids will be found to answer. In some instances the "E" separator is more satisfactory than the one designed for centrals and laterals. It is also particularly well suited for use on the lower bicuspids. It can be applied to so many of the front teeth that it may be considered by far the most universal of the set. In reference to the general use of these separators Dr. Perry found some of his earliest forms were so designed that the jaws could not reach the gums, even when used on the shortest teeth. They were easily applied, and of course could be operated with no thought of the gum. But it often happened that, in using them on teeth having large approximal cavities, the jaws would rest on the teeth over the large diameter of the cavities,and of course at the risk of crushing in the frail walls. In such cases they were useless. It was decided to design them so that the jaws would engage the teeth near the gum, and below the boundary of large cavities. Careless operators, might disturb the gum when the operators were used on short teeth. To overcome this danger, after trying many different methods it was found that the best result could be easily reached by the use of warmed masses of red gutta-percha placed under the bows on the ends of the teeth. The gutta-percha is easily applied, and if the screws are turned gently while it is still warm the bows imbed themselves in it in such a manner as to hold the separators with great firmness, and with absolute safety to the gum. Among the earlier forms was designed a separator intended to rest on the ends of the teeth that were to be separated. In many instances this worked well, but it often happened that it did not allow sufficient latitude in its application or sufficient working room about the teeth.

AMALGAM FALLACIES.

By Dr. A. Morsman, Omaha, Neb.

Combatting the statement that amalgams produce mercurialisation the writer avers: There is nothing in this charge against amalgam. Undoubtedly the fallacy had an honest origin, because when amalgam first came into use, everything was against it. But the man who to-day believes that amalgam fillings produce ptyalism, is more than a quarter of a century behind the times. Another fallacy is that amalgam must be mixed dry and worked dry, that is, with as little mercury in it as possible. Amalgam cannot be satisfactorily worked very dry. The very quality which makes it valuable, is its plasticity. The writer believes it makes no difference how much mercury was mixed with an alloy, if it was again removed, either before filling or while inserting. Now, it is very easy to remove mercury from amalgam until there is no more there than the atomicities of the metals require. Let the amalgam be soft enough to work well; it is just as difficult to handle it when too soft as when too dry. Pack it into the cavity with ball point instruments, rubbing it *thoroughly* and *hard*, so that the mercury is worked to the surface, then take a spoon-shaped excavator, or any other suitable instrument, and scoop out all the surface of the plug down to that portion which is hard and dry by reason of the pressure. Throw this away and add more fresh amalgam, which manipulate in the same way. Do this again and again, until the cavity is full. The more time taken the better the work. There is no danger of amalgam setting while it is being worked. Of course, a matrix of some kind is a necessity for proximal cavities; the simpler it is the better. Another fallacy is that amalgam can be injured by squeezing; that some metals will be squeezed out while others will not. If anything of that kind occurs, it will be to the improvement of the remainder. Amalgam cannot be benefitted by washing, unless it is a dirty alloy, containing impurities. Any alloy or amalgam containing silver, will discolour in proportion to the amount of silver it contains; washing will not prevent it. Washing does not injure an amalgam, provided the moisture be removed by dry napkins or thorough manipulation. Zinc is of no use in a dental alloy; gold also, Dr. Morsman thinks, is not of the slightest value; it has no more effect than that much additional tin. Platinum is totally worthless in this connection. Copper has the reputation of being a great desideratum as a component of dental alloys. It is unquestionably true that alloys made without it do most excellent work, and, moreover, they show, if heavily silvered, the same effects which have been so generally credited to copper. The writer is inclined to believe copper also will be proved a fallacy. It is a fallacy to believe that amalgam fillings are less subject to marginal decay than gold. There is not so very much difference, given equal skill in both cases. What difference there is, is decidedly in favour of gold. The spheroidal tendency of amalgam is a myth. It will not "spheroid" if it does not contain a large excess of mercury. Excess of mercury has nothing whatever to do with discolouration. It is a fallacy to suppose that all amalgams must either shrink or expand, (to an appreciable extent.) Pure copper amalgam neither expands nor contracts, and an alloy of tin and silver, in proper proportions, will neither expand nor contract. It is a fallacy to suppose that the quantity of tin in an alloy should be in excess of the silver; the silver should be very largely in excess. It is a fallacy to suppose that the setting of amalgam is due to silver; pure silver amalgam, made cold, will not set, neither will tin, to any great extent; it is the *union* of the two metals, the compound having this property. Antimony is unfit for a dental alloy. Mercury *does not* "gradually disappear" from an amalgam filling, except what is in excess. It remains in chemical union with the other metals, and mercury could be obtained from a plug a thousand years old, if sufficient heat was applied. The theory of electrical action, incited in the mouth, either by amalgam or gold, or both, is doubtful. A weak current can be developed in a *bright* amalgam filling sometimes, but rarely even then, and almost never after it has become discoloured. That it has any effect in producing decay, the writer believes is absurd. It is a fallacy to think that gold in a tooth contra-indicates amalgam, or the reverse. They can be brought in contact or used with *dentos* between, or in any other way without reference to each other and without any bad result. Oxidation or discolouration of an amalgam does not prevent decay, although it doubtless helps. It is a fallacy to suppose that amalgam will equal gold in tooth-saving qualities, where *good* gold work can be done; there is no material known that can be so closely adapted to margins *when accessible*, as gold. It is a fallacy to suppose that gold is always better than amalgam ; very often a good gold filling cannot be placed. It is a fallacy to suppose that gold must be used where it "shows," and amalgam can be used everywhere that it does not show.

THE ARCHIVES OF DENTISTRY.

CAPSICUM AS A COUNTER-IRRITANT.

By C. B. Rohland, D. D. S., Alton, Ill.

Counter-irritation, when used judiciously, is of great value to the dentist. The soreness frequently following the filling of roots, or of prolonged operations in gold filling, may, in nearly all cases, be successfully controlled by the application of a capsicum bag. The capsicum bag sand plasters are satisfactorily made as follows : Buy a " Benson Capsicum Plaster," shellac the back of it, cut off, in pieces of size suitable to the case in hand, and, if only gentle stimulation is required apply as it is. Should more decided action, be needed, add a few grains of capsicum, which will adhere to the sticky surface. Should you desire to use other medicines, press a small wad of prepared cotton or paper fibre lint to the sticky side of plaster, trim to suit, and moisten with any tincture or combination you please. This is also a very effective way of applying cocaine. Apply moistened pads to the outside and inside gum, hold with thumb and forefinger, or with properly bent piano wire, after the method of the "automatic forceps." A great saving is thus effected.

A CASE OF ALVEOLAR ABSCESS MISTAKEN FOR CARCINOMA.

By Dr. L. Milliron, Kimball, Dakota.

The patient suffering from chill due to exposure was said by her doctor to have intermittent fever. Further examination of the throat revealed a tumor of the hard palate ; the doctor diagnosed it as carcinoma. After the second day the symptoms became alarming ; the patient seeing that she was gradually growing weaker, insisted on seeing the dentist. Investigation disclosed an alveolar abscess of the superior maxilla ; pus had formed and was seeking exit through the mesial portion of the hard palate. A tumefaction, half the size of a hen's egg, had formed over the hard palate ; it was intensely painful on pressure. The teeth were sensitive, and especially so on occlusion. Vomiting and other alarming symptoms were present. The tumour was opened and washed out and much pus liberated, *phenol sodique, dil.* was employed as a wash, and used *aconite* and *chloroform, aa,* as a counter-irritant, and ordered a hot foot bath to be given. Rapid recovery followed.

MALARIAL INFLUENCE THE PROBABLE CAUSE OF FAILURES IN PULP CAPPING.

By Morgan Adams, M. D., D. D. S., Sardis, Miss.

Referring to the success of pulp capping the writer says close observation shows the successful cases are generally reported from high, healthy localities, where the atmosphere is pure and free from malaria, while the failures are reported from localities where the opposite conditions obtain. It must be remembered, too, that malaria is an insidious enemy, and often lurks where we least expect it. This is recognised by physicians, who practise in malarial districts, and hence the *important role* that quinine plays in the treatment of almost all diseases, as almost all diseases are stamped with the toxic effects of malaria. The system may sometimes be charged with malaria for years, without giving unpleasant symptoms, when some exciting cause will suddenly start it. A case in point: a railroad engineer lived in a malarial district for some time, when he removed to a section of country in Pennsylvania, where malaria was unknown. After the lapse of fifteen years, he sustained some bodily injury, when he at once began to have chills and fever. Another case being on this point: a gentlemen accidentally dropped a four-pound weight on his foot, the pain produced thereby was not severe, and passed away in a few minutes; a few hours later, however, a paroxysm came on like that produced by malaria, and the foot became so painful that he could not walk without assistance. A few doses of quinine removed all trouble in a short time. Might we not conclude from the foregoing cases, that failures in pulp capping, even in favourable localities, might be traced to malarial influences. Taking the whole subject into consideration, may we not conclude that it is almost useless to cap exposed pulps in malarial districts, except in the most favourable cases! Malarial influences have been hinted at before in dental practice, but the subject is an important one. The use of antipyrin is suggested in the treatment of pulpitis possibly of malarial origin.

"THE REDUCED VULCANIZING TIME."

By Dr. A. H. Hilzam, Jackson, Mass.

The writer, about twelve months since, succeeded in vulcanizing their extra tough rubber in thirty-five minutes at 300° F. He afterwards tried Ash's Pink No. 2, and Dougherty's Weighted rubber, in combination with the above, and found that all three came out perfectly vulcanized. Subsequently he tried the Atlas rubber, made by the Atlas Manfg. Co., of New York, and found that it required full fifty minutes at 300° F., hence he came to the conclusion that all rubber would not stand this reduced time, and is of that opinion still. Since making the above discovery, he has been using Johnson & Lund's Extra Tough, Ash's Pink No.

1, and Dougharty's Weighted, exclusively, and running the vulcanizer at 300° F., for thirty-five minutes, invariably, for *one* flask or *two* flasks, and he finds it works well. He has not tried a piece for thirty minutes at 320°. He gets the thermometer up to 300° F. in thirty minutes over a gas stove.

AN EXPEDIENT.

By F. G. Eddy.

M. E———, aged 15, presented herself for irregularity, which consisted of the upper incisors shutting behind the lower. The first step forcing the upper incisors sufficiently outward, by means of a rubber plate covering the grinding surfaces of the molars, thus obtaining a false bite and movement of the objective teeth by rubber packing, increased in thickness as required. The left superior lateral was, at the commencement of the operation, so far within the arch that, when thus forced out, it was found to be too short to catch over the lower teeth. After trying various means to coax the refractory tooth down to position, without avail, as a last resort, a ring of rubber tubing was tied to it at the neck and the opposite of the ring fastened to the lower cuspid of the same side, and, after instructing the patient to live, in the meantime, upon what liquid food could be conveniently taken in the small space obtainable by stretching the connection, she was dismissed at about 5 o'clock p.m. She came again 4 p.m. the next day, with the tooth in question down to the required length. The upper teeth were ligatured by tying a knot between each one to secure the advantage thus gained, and again dismissed her. Six months after the condition is satisfactory.

GANGRENOUS TOOTH-PULPS AS CENTRES OF INFECTION.

By W. D. Miller, M.D., D.D.S., Berlin, Germany.

Pathogenic bacteria are frequently found in the human mouth (we might say, *constantly*, particularly in unclean mouths) and a suppurating tooth pulp seems to act as a sort of sieve to separate them from the non-pathogenic, for in tooth pulps, there are not so many kinds of bacteria as are found in the mouth. Moreover, the bacteria of such pulps, appear to be more pathogenic than the bacteria of the healthy mouth. In order to secure portions of gangrenous pulps which might not be impurified by outside material. The freshly extracted tooth was mechanically cleaned and brought for a moment into a solution of bichloride of mercury (5 to 1,000). It was then rinsed in a large quantity of sterilized water, in order to remove the sublimate, split with sterilized forceps and a portion of the putrid pulp removed, of course with a sterilized needle. The material obtained in this way was used for inoculating mice subcutaneously, a pocket having been formed at the root of the tail for this purpose. 118 inoculations were made followed, in a great majority of cases, in twenty-four hours by inflammation and swelling at the point of inoculation. At the end of the second or third day a small abscess will usually be found, which, if opened, evacuates a drop of pus densely impregnated with micro-organisms. The reaction is not so severe or extensive as it generally is when a human being is inoculated by forcing gangrenous pulp tissue through the apical foramen, for the reason that in the latter case the point of inoculation lies much deeper and is surrounded by bone tissue. In the case of the twelfth pulp experimented with, the reaction was very interesting and characteristic. In twelve to fifteen hours a blackish or blueish-black spot had formed around the pocket; in 24 hours some swelling was noted and already a slight fluctuation, *i.e.*, a slight formation of pus. At the end of the second day a tumour about the size of a pea had developed, which, on being punctured, evacuated a considerable quantity of pus mixed with gas with a strong and offensive odour. A second mouse inoculated with a small quantity of this pus developed exactly the same symptoms; likewise a third inoculated from the second, and so on to the twelfth. During an enforced absence of the professor, the mouse last inoculated died, and with it this series of inoculations. The specific bacterium of this strictly gangrenous process, could not be cultivated for the reason that it, like many others of the oral bacteria, does not grow upon artificial media. In two other cases the inoculation was followed by blood poisoning, the mice dying in from two to six days, with large numbers of micro-organisms in the blood and organs. From these few experiments it may already be seen that each gangrenous tooth pulp may be in itself a centre of infection, or it may serve as a channel through which pathogenic bacteria from the oral cavity may invade the tissue surrounding the point of the root, or even obtain entrance into the circulation.

INDEPENDENT PRACTITIONER.

CHROMOGENIC BACTERIA OF THE HUMAN MOUTH.—THEIR RELATION TO THE DIFFERENT COLOURS OF DECAYED DENTINE.

By Prof. W. D. MILLER, Berlin, Germany.

MANY theories have been proposed to account for the various colours presented by decayed dentine. Watt attributes these colours to the action of the various mineral acids, concerned in the production of caries. Food, drink, certainly sometimes produce discolouration of the decayed as well as of the healthy tooth tissue. A third theory traces the colour to within, and the result of the vital action of the tooth. A fourth would hold the chromogenic bacteria, micrococcus prodigiosus, &c., accountable for the various colours found. Chromogenic bacteria are often found in the human mouth; being widely distributed in nature. A plate of gelatine exposed to impure air for a short time almost invariably develops one or more coloured colonies; green, various shades of yellow, brown, and red, often being represented on one plate. As a rule, the colourless bacteria predominate in the human mouth to such an extent that the chromogenic bacteria, if present, cannot be detected; occasionally, however, they may be easily recognized even by the naked eye. A brick-red colour is observable more frequently than any other, on the lingual surface of the lower front teeth and on the buccal surface of the molar teeth. The cultivation succeeds with considerable difficulty. Frequently in cavities of decay, usually dark brown, in which the surface of the dentine is coloured with a bright yellow mass of cheesy consistency. Dr. Miller has failed to obtain a pure culture of this bacterium on gelatine. Two appearances just described will easily be detected. A case which was interesting in more than one respect occurred at the polyclinic of the Dental Institute at Berlin, a few weeks ago. A man presented himself, having a swelling on the right side of the face, almost as large as a man's fist, connected with the inferior wisdom-tooth (impeded eruption). The larger portion of the surface of the mouth and tongue was covered with a canary yellow deposit, which could not be accounted for by anything that the patient had taken into his mouth. A bacillus was found in the pus which was evacuated upon the extraction of the tooth, and also in the yellow layer upon the surface of the cheeks and gums, which reproduced the same colour in pure cultures and besides showed considerable pathogenic action. Dr. Miller has found in the human mouth and isolated no less than eight different kinds of bacteria which produce a yellow pigment, not including the well-know yellow sarcina. These bacteria are themselves yellow, but do not impart any colour to the culture medium. Dr. Miller has failed to cultivate the supposed bacterium of greenstain, althrough he has isolated five different bacteria from the mouth which *impart a green colour to the culture media*, being themselves colourless, and all of which grow well on the usual media, but none probably bear causal connection with the greenstain, since, as far as observation goes, the bacterium of greenstain, if there be such a thing, does not grow on gelatine. Dr. Miller found one of these in the contents of an alveolar abscess ; it grew with tolerable rapidity, liquefying the gelatine. If cultivated without the presence of oxygen no colour is developed, but if the culture is shaken with air, it will, in a few seconds, assume a beautiful green colour. He found the second in a cavity of decay, and the other three in the search for the supposed bacterium of pyorrhœa alveolaris ; they are colourless, but impart a beautiful opalescent colour to the gelatine, one of them having, at the beginning, a decidedly bluish tinge. The cultures of one bacterium obtained from the mouth have a red colour on the surface, but are colourless beneath the surface the protoplasm of the living cells contains the colouring matter, and no colour is imparted to the gelatine. Another has a reddish colour also confined to the bacteria themselves. Cultures of still another have a decided brownish colour. It liquefies the gelatine, and sinks to the bottom as a brownish irregular mass. Probably, Dr. Miller thinks, the chromogenic fungi do not produce any of the colour found in carious dentine. The green-producing bacteria, named *Bacteria visidantia*, are excluded, because green dentine does not occur. Those which assume a yellow colour (*Bacteria flavescentia*) cannot be looked upon as the direct cause of the yellow shade of carious dentine, because the colour is confined to the micro-organisms themselves, the medium on which they are cultivated becoming very little if at all stained. In the case of dentine, the relations are exactly the opposite; the dentine becomes stained while the micro-organisms remain colourless (white). This is probably well known to those who made a few sections of carious dentine. The colouring of carious dentine is, Dr. Miller contends explained in an altogether different manner. The following description, was taken from actual experiments. A tube of culture gelatine was inoculated with a bacterium obtained from carious dentine; almost any bacterium which liquefies the gelatine would, however, have served the same purpose. In about two weeks the gelatine was completely melted and a white mass of bacteria lay on the bottom of the tube. At the beginning of the experiment the gelatine had only the slight yellowish tinge often present in culture gelatine, gradually a brownish colour appeared. After ten weeks the colour gradually grew darker, long after all the bacteria were dead. An old dry culture, 6-8 months old gave the appearance of black spots (so called caries nigra) often seen on the approximal surfaces of teeth where caries once began and then ceased after the removal of the approximating tooth. Organic matter undergoing decomposition assumes, as is well known, a dark colour, and the same is true of decaying dentine. The colours characteristic of decaying dentine do not exist in the very beginning of the decay, but appear subsequently. The more recent or acute the decay the less the discoloration; the older or more chronic the decay the deeper the colour. Another factor which may play a part in the discolouration of dentine, more particularly in those that contain dead pulps; the latter sometimes become intensely black, and it is to these in particular that the following suggestion refers. Iron has recently been shown to exist in many tissues in which its presence was not suspected. Dr. Miller thinking it might exist in the dental pulp and by forming a black sulphide, gives use to discolouration instituted some experiments. The tests were made in the following manner. A tooth was cracked in a porcelain mortar, so as to thoroughly expose the pulp, and then placed in a mixture of dilute hydrochloric acid, to which was added a small proportion of a 10 per cent. solution of ferro-cyanide of potassium. The hydrochloride acid, as well as the water used for diluting it were found free from iron. Those parts of the tooth containing iron, even in minute quantities, will, after an exposure of from one to sixty minutes, assume a blue colour, Prussian blue being formed. One source of error is introduced in the necessary use of an iron instrument in extracting the tooth, but this will only affect those points on the external surface of the tooth with which the forceps come in contact, and may therefore easily eliminated. Dr. Miller has found iron 1, constantly in Nasmyth's membrane (probably only as a deposit from external sources); 2, in the dental pulp, though not constantly; 3, in carious dentine almost constantly, sometimes a bright blue line forming on the border between the decalcified and normal tissue, a rather remarkable appearance, 4, in enamel, particularly around the margin of cavities of decay, also sometimes in decalcified enamel. It seems, consequently, not impossible that the sulphide of iron which would be formed during putrefaction of the pulp may have something to do with the discolouration of the same. Whether sulphide of iron may be formed through decay of the dentine or enamel in sufficient quantity to aid in discolouring the same, is Dr. Miller thinks doubtful. Further experiments may furnish an answer to this question.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to pit one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

NEW FORM OF COPPER AMALGAM.

A NEW form of copper amalgam has been introduced by Mr. P. C. James, which certainly has the merit of convenience, for being made in the shape of a disc it can be heated on any flat surface. It also appears to possess the further advantage that having been compressed mechanically in a mould, more mercury has been expressed, and although a little dry to mix and requiring thereby a little extra patience, the user is rewarded by a very solid filling apparently free from shrinkage.

Literary Notices and Selections.

DENTISTRY AS PRACTISED IN GLASGOW.

By Robert Thompson, L.D.S. Fac. Phys. & Surg. Glas.

In the first half of the present century dentistry, at least in Glasgow, was in its infancy, and indeed very little was known about it unless by a few of the wealthier citizens, and at that time little or no interest was taken to advance its benefits to the general public. But what a change has taken place since the beginning of the second half of the century! We have now our dental schools and lecturers, gentlemen highly qualified for the post they hold; also, a dental hospital, where attendance is given free to all. But shortly after the second half of this century had began a great wave of printers' ink lifted dentistry into notice. About this time began the advertising era, bringing dentistry and its advantages prominently before the public, and making it known to all who could read that popular, but according to professional ideas, very questionable way of making the profession of dentistry known, which continued in great force—even in our own city—till the passing of the Dental Act of 1878, and even for some time after, but shortly afterwards advertising received a check, but how? not from that wonderful bill which was to revolutionize the whole dental profession, but from a very different cause, viz., a few of the leading advertising men grinding up and passing the *then* examination for the dental diploma, but of course that was *after they had established a practice by the medium of advertising for several years.* Now I will endeavour to show whether the end in the Bill aimed at has been reached.

Until the year 1873 the diploma of Licentiate in Dental Surgery was not known to the public of Glasgow. In that year one dentist gained that distinguished honour in London. At that time, we had, I believe, two or three medical men practising dentistry. Of course, there were many competent men in the profession, but these were the legally qualified men, and up till that date, little progress had been made in advancing dentistry to the dignity of a profession. About this time agitation began slowly and steadily and continued to ripen until it brought forth the Dental Act of 1878, an Act which its fathers should not rest content with, because so far as I can see or learn, it is likely to make the last quarter of the century worse than the first. Now I will endeavour to show how that will happen unless an amended and very stringent additional Act be passed soon.

The great and central principle of the Act is the provision of competent dental surgeons. Everything else in the Act is secondary and subservient to the development and maintenance of this overwhelming principle. The Dental Act has united the dental profession only in name, and afforded a chance to a large number of persons to claim protection and privileges to which they had no previous right, and which claims were in no sense created until after its existence. It is in the power of any person under Section 35 of the Act, to commence proceedings against any other person who has registered by means of a false declaration, but what single individual can there be found to undertake the trouble and expense, to say nothing of the stigma that would cling to the prosecutor.[*] No doubt a great number, destitute of any proper claim have got their names on the dental register, but the lapse of time will not matter, for if the name has been wrongly put on the register it most certainly should, at the first opportunity be taken off by another clause of the Act. The registration of any person who held no recognised diploma, or was not a *bona fide* dentist, was to have ceased on the first day of August, 1879, and yet we find men still getting registered who held no diploma and had no connection with dentistry. Why is such a state of affairs found in the dental profession? For a very simple reason—want of Unity. There lies the problem.

We have in Glasgow, over sixty dentists in legitimate practice, of these only about thirty hold any recognised diploma, a few have bogus degrees, such as D.Ph., and so on. One puts S.D. after his name, and another puts R.D.S. as a means to gull the public, and one even went the length

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[* The British Dental Association have undertaken this onerous and thankless task. Ed. B J.D.Sc.]

of having his name inserted in the Medical Directory as an L.D.S., and when I drew his attention to it, his answer was, "Oh, I am quite entitled to put L.D.S. after my name. It simply means that I am a Legalised Dental Surgeon." Afterwards I drew the attention of the Secretary of the Faculty of Physicians and Surgeons [of Glasgow], and also a prominent member of the profession in Glasgow to the fact, but nothing resulted therefrom. We all know that anyone can put whatever letter he likes after his name, and it can be taken to mean anything or nothing, but when any member of a profession does so, it must be taken to mean that he is qualified to practice a certain thing by virtue of having these letters added ; but if he is assuming what he is not entitled to, then I say it is a fraud on the public of the worst kind and deserves punishment. Although we have in Glasgow only thirty men with recognised diplomas, we have about as large a number of old practitioners who have been thoroughly trained to the dental profession, and conduct their practices in quite a legitimate and professional way. These few, however, do not account for all the names in our local directory as dentists, and not by a great number, of those who figure on the dental register as being dentists, and who practise the profession of dentistry in this city. In a tour round the streets of Glasgow, one observes above the doors and on the windows of a large number of druggist's shops the following: —Mr. So-and-so, surgeon dentist." "Teeth carefully and skilfully extracted and best teeth from a certain sum," and so on, these words are also printed on small bills, and on the cover of Seidlitz powders and labels on medicine bottles, &c. These men swell the number of dentists to over one hundred. Now, if such things were found on the shops of *bona fide* chemists and druggists, who were qualified or registered as such before the passing of the Dental Act, it could to some extent be accounted for, but it is found where no such name exists on the Chemists' and Druggists' Register. Young lads in drug shops or dispensing shops of medical men, have somehow got registered as dentists, and now practice as Surgeon Dentists and also attend to the drug shop. Further, at the present day in this city, a person can have his hair cut or have a shave on one side of the street, and the same man will act as his dentist on the other. Some others, I understand, pay people from 20 to 50 per cent to bring patients to their rooms, and others supply teeth payable by weekly instalments. Does that look as if the Dental Act had advanced the dignity of the profession? These facts unquestionably show that the working of the act has been as yet a total failure.

Are these so-called dentists or patent medicine vendors, to be allowed to reap where they have not sown, because the dentists are not in unity? Are the Licentiates in Dental Surgery to have their legal rights and privileges trampled under foot? It seems to me as if we would rather be at loggerheads with our petty jealousies of each other, than unite in fighting a common foe. A few years ago there was a local dentist, whose patient disputed his account and had it taken into court, with the result that the dentist lost. This was, I consider, simply by fighting single handed. If there had been unity amongst the profession so as to have taken charge of the case and brought forward evidences to support the dentist's statement, doubtless our friend would have won his case, and the profession gained a victory.

Is such state of affairs to be allowed? and are we as Licentiates to stand by, and see men who have toiled, and spent time and money in years of study, in gaining the necessary knowledge to pass the professional examination for the coveted diploma of L.D.S. are we to stand by and see those men starved out of the profession by charlatans? Let a dentist begin practice in any part of the city, he will be sure to be surrounded in a very short time by a host of these vermin. He will find them cutting him down at all points, even sending messengers to inquire what his fees are for doing this, that, or the other thing, with the result that the quack will do the job for so much less than the dentist can afford to do it, he has to live solely by his dental practice. Where is the boasted British Dental Association that was to do so much to purge the Dental Register, that we cannot have a test case brought up and get these parasites away for ever?

I am confident, as I have cause to know, that if the dentists do not get the line drawn somewhere soon, they will have another kind of danger to face, viz.: those young men who are at present merely mechanical dentists and likely to be nothing else, and there are a good many such *manufactured* in this city—no other name can be given them: for some dentists engage young lads under something very like false pretences. They flatter them and their parents about the fine position of dentistry, the big pay that can be got after the apprenticeship, and so on, but they never say a word about certain examinations that require to be passed before they can be qualified to begin practice on their own account. That is all kept in the dark until the young lads, when too late, find it out for themselves; which is only after they are bound hard and fast for the term of five or seven years, and if they mention the fact the answer is, your parents should have known all these things. Some of these young men *have begun practice*, and others will follow, having no experience whatever, of operations and further, men who have not the slightest connection with dentistry will also begin, and put up "Maker and Supplier of Artificial Teeth," and there is nothing in the Act of 1878 to hinder them from doing so. It is done in a way already. I happen to know a party who speaks about beginning this style of dentistry and going largely into advertising on an attractive scale, and I have not the least hesitation in saying that to a man with some capital and audacity, it would soon be a very profitable or unprofitable concern, although as I said before, a very questionable way of making money, at least, according to professional ideas.

If there was a unity amongst the qualified dentists—a thorough understanding with each other—so as to act as one in exposing these men who gull the public with self-made or bought diplomas, then they would become a representative body, and be able to fight for their own interests. They would then be able to make a united effort to prevent men from practising dentistry who are not *bona fide* dentists. They should have also a minimum scale of fees drawn up and presented to each member, and none to charge less under the pain of certain increasing penalties for each offence, or expulsion from the Register. Further, they should try and get something better than monthly meetings in winter: for instance, they could have a dentists' club and library, where members of the profession could meet in friendliness any week night, and talk about professional matters. I am confident if the thing was only taken in hand in a businesslike manner, it could be carried out successfully, and be of great benefit to the profession as a whole. Through the different publications connected with dentistry, it would become known; and any dentist visiting our city would know where to spend an hour with members of the same profession, and have an interchange of ideas. In that way, through time, they would come to know something personally about other dentists, and their ways of doing things throughout the world. This would tend very materially to broaden their ideas, and help greatly to take away those narrow-minded jealousies and self-sufficiencies that many of them have, and make them a more liberal minded and cosmopolitan class of men. In this, and many other ways, qualified dentists would become known to the public, and advantage would be taken of the benefits they could bestow. In fact, dentists are, or should be, able to bestow one of the greatest aids to health and happiness ever conferred on suffering humanity; and I have no doubt when the public get to know the qualified dentist from the quack, they will then become their willing patrons, and not as now their patrons only when dire necessity compels them.

But how are the public to know the licentiate from the quack? For myself, I do not see, and never did see, how the public can know unless something be done to draw their attention to the fact. It is absurd to think that a licentiate in dental surgery, when he begins practice, should have to sit down and wait for patients coming in to consult him, when the patients do not know where to find him, and he is not allowed to make himself known to them. Yet the quack can do so, (*i.e.* advertise) although he may not go through the streets with some one in front of him, crying "Hi, hi, Mr. So-and-so is here, and cures all sorts of diseases, as well as extracts and inserts teeth at lowest prices." We had an exhibition of this in Glasgow a few years ago, a female quack going about with an instrumental band to attract attention; but, without these, the quacks have still the daily and evening papers open to them (the advertisements from several lie before me), and boards with placards in every conceivable place, tell of their great skill, what they can do, and what they will do it for, while the qualified man has just to grin and bear it all. It may be very well for those dentists who drop into a practice made for them, or bought for them by their fathers or friends, but it is otherwise with the young man who begins practice at the present day as a dentist, unless he has plenty of capital, so that he can afford to wait on making a practice, must submit to slow starvation or a weary, weary wait for a number of years.

There is another matter in connection with the profession where some of the members go wrong for the sake of a little temporary gain, and, in fact, I may say that those men guilty of it are, if you will pardon the expression, "cutting their own throats." You will very naturally ask how? Well, is it not known that some dentists in this city are in the habit of doing mechanical work at a very low price for those very men, chemist, druggist and others, who are hanging on to the skirts of dentistry, not only doing mechanical work, but even going to their houses and preparing the mouth, and taking the impression for a new set, and thus teaching those men to do it for themselves—hence the reason for so many men now being styled or styling themselves "dentists." A transaction like this should be condemned, and yet a few dentists in practice do this regularly. I do not object to any dentist doing work for another member of the profession, who may not have time or accommodation, or does not wish to do his own mechanical work; but I decidedly object to them doing work for these hangers on.

To sum up. What is wanted is "Unity." There is too much of that spirit of centralization going on. Nothing seems right unless it is done in London. I quite agree and give in to a central power, but only as a place where the ideas of a great many are focused, so as to carry out the details and attend to the routine of the business, but I do not believe in a central power which excludes every idea but that which emanates from itself. For instance, were the British Dental Association wishing all dentists to become members, I would say that it would require first to lower the entrance fees, and also make an affiliated branch in every great centre, such as Glasgow, Edinburgh, Dundee, and Aberdeen, *without increasing* its fees for membership, and also allow a representative to be chosen from every branch, say one from over ten members, two for twenty, but at most not more than three representatives from any one branch, said representatives to be chosen annually to attend the annual general meeting of the B.D.A., and the representatives' expenses to be *paid* out of the general funds, and also that the annual general meeting be held in each of the great centres in succession, and in that way greater interest would be taken in its proceedings. I would also suggest to the executive committee of the B.D.A. that any L.D.S. or medical man practising dentistry, who wishes to become a member *should be* admitted on application and payment of entrance fees, but that registered men should only be admitted in the usual way, viz.: by being balloted for at the local branch. In this way it would, through its branches, become a thorough representative society. *South Glasgow Gazette.*

DENTAL SCHOOLS AS DEPARTMENTS OF MEDICAL SCHOOLS.

By F. Newland Pedley, F.R.C.S. and L.D.S.,
Dental Surgeon to Guy's Hospital.

Every speciality of medicine should be taught in general medical schools, and there is nothing in dental surgery that cannot be done and taught in a general hospital. The institution of dental schools in general hospitals would place dental surgery on the same footing as to the other specialities, and would open up a vast field for remunerative labour in the only speciality that is not crowded. For the last ten years no one has been allowed to adopt the dental profession without having obtained the L.D.S. diploma, and since that date the entry of qualified men has not been equal to the yearly losses. Last year 354 names disappeared from the *Register*, and only 45 additional licentiates entered the profession throughout the United Kingdom. Hence there will soon be a considerable demand for dental education, and fresh "special" hospitals will have to be opened, or dental surgery will have to be taught in general hospitals. Few will doubt that the latter course is preferable.

The following is an outline of the existing plan of dental education. It is a four years' curriculum from the date of registration as a student. The first two years are spent in a workroom as apprentice or pupil to a registered dental surgeon. The second two years are passed in hospital study. The apprenticeship extends over three years, but the third year of this term is allowed to run contemporaneously with the course of hospital study. At the end of the first two years the dental student enters a general hospital and a "special" hospital at the same time. At the former he dissects, and attends lectures on general surgery, medicine, etc. At the "special" hospital he attends lectures on dental subjects, and learns the practical work of his calling. There are two "special" hospitals, one in Leicester Square and one in Great Portland Street. On the completion of four years after registration the candidate is eligible for examination as licentiate of dental surgery. The L.D.S. diploma confers the right to practice dental surgery. Obviously great disadvantages beset this wandering existence between two hospitals, with both of which the dental student is connected, and to neither of which can he feel he belongs. He may be pardoned if in after life he is uncertain whether he represents a development of surgery or a "special" creation.

The great majority of dental students enter at Charing Cross or Middlesex, as these hospitals are conveniently situated for the "special" hospitals, and the lecture hours, etc., are harmonised to suit the practice and lectures of the "special" hospitals. This disjointed system was necessary in the past, because the new development was going through rapid transitional changes, and a complete special course of training had to be gradually elaborated. And here a pause should be made to offer a just tribute to the Dental Hospital, Leicester Square, whose staff have well completed their task, and, keeping their institution free from the objections usually attaching to "special" hospitals, have carried dental education forward to a point at which it may now be wisely transferred to general hospitals.

The hospital alluded to is incomplete as a dental school, in possessing no beds, and having no surgical and medical teaching within it; but there is no reason that a general hospital should not now include a dental school, whereby the necessary instruction could be afforded devoid of impediment. All that is needed is to secure daily attendance of dental officers to teach and demonstrate, and to appoint lecturers on the special subjects. This transfer would be fraught with great benefit to general hospitals, to dental students, and to medical students. The general hospitals would be enabled to treat a large class of disease which is at present very much neglected. The dental student would have an opportunity of attending a great hospital, and receiving his complete education under one roof amongst medical students, and he could not fail to carry away with him traditions and friendships that would influence his professional career.

A fair proportion of dental students take the M.R.C.S. as well as the L.D.S., and, under favourable circumstances, most of them would find it well and easy to complete the requirements for the M.R.C.S., L.R.C.P., and L.D.S. They could distribute their dental studies over the whole hospital course. Such men would certainly be dental specialists. At present these candidates are practically precluded from attending great hospitals, for they lose so much time running backwards and forwards, and the lecture hours too find in. The writer does not forget his experiences as a student at Guy's Hospital and Leicester Square Hospital contemporaneously. During two successive summer sessions, the student has to attend at 8 A.M., four days a week, at Leicester Square Hospital for special lectures.

Medical students would profit greatly by being able to familiarise themselves with the scope of the speciality, and by acquiring a general knowledge of the means adopted by dentists to alleviate dental disorders. They could continue to hold appointments of dental surgeons' dressers in the extracting-room, and would there learn what teeth should be removed and what can be saved. They would have daily opportunities of witnessing the exhibition of nitrous oxide gas, alone or in combination with ether. A daily attendance of anæsthetists could easily be secured from amongst qualified students, and this appointment would be of great service to those who held it. Such tuition would enable a general practitioner to give an opinion on questions that will inevitably be asked him in practice, and at this point he may rest. I would strictly confine the practical work of the stopping-room to dental students. General practitioners should not fill teeth, and as students they should not waste their time in acquiring a mere smattering of that art. Another class of students would benefit greatly by facilities to take up dental surgery as a speciality. I refer to the numerous young qualified men wandering about every hospital, and with no prospects of making a practice in general surgery or medicine. Many of these would be glad to devote themselves to a specialty which is open to young men. For thoroughly educated young specialists of this description there is an unlimited field; and the College of Surgeons offers them every facility by modifying their curriculum and examination for the L.D.S.

It is noteworthy that the British Colonies and India are practically without dentists. Granted the work is of a tedious nature, and, as a rule, fatiguing, yet the patients are not of a disagreeable class; the evening may be devoted to leisure, and sleep is undisturbed by the call of duty. Any first-rate operator, however young, can earn a fair living from the commencement, and it is quite his own fault if he do not eventually attain moderate worldly success. No one can be advised to enter the profession in a half-hearted way; bad mechanics and incompetent manipulators will assuredly fail to succeed, and rightly, too. Also, the tendency of bringing dental education within the scope of general schools would be to raise the standard and enhance the competition. On the other hand, when the dental speciality is taught and practised like the other specialities of medicine, there will be feeble prospects of competition from abroad, and an increased appreciation of the importance of the subject will create an enormous demand for this kind of skilled labour. Good operators have nothing to fear for many years, as the present *Dental Register* only contains 5,000 names, and not one thousand of these men are qualified.—*British Medical Journal.*

Dental News.

VACANCY.

National Dental Hospital, 149, Great Portland Street. The post of House Surgeon is vacant. Applications to the Secretary.

APPOINTMENTS.

Alfred Dalby, L.D.S., Eng., and Herbert Geo. Henry L.S.D., Eng., have been appoinied House Surgeons to the Liverpool Dental Hospital.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

THE DENTISTS' ACT.

To the Editor of the "British Journal of Dental Science,"

Sir,—It is much to be regretted that writers on the above subject in popular journals should be allowed to put forth statements calculated to deceive the ill-informed public and to drive simple readers into the hands of quacks. The Dentists' Act of 1878 was passed in the interests of the public. It compelled every dental practitioner then carrying on his profession to put his name on the Dentists' Register; and it provided that in future no one should be allowed to assume a professional title unless he were so registered. To obtain registration—to legally enter upon practice as a dentist—it is necessary now to obtain a recognised diploma in dental surgery after undergoing the course of education—occupying five to six years—presented by the General Medical Council The dental profession is, in fact, now a legally instituted branch of the medical profession governed by the same laws and administered by the same authorities The Dentists' Act was carried through the efforts of the British Dental Association, which comprises all the distinguished and most of the respectable members of the profession.

In the absence of a public prosecutor to enforce the penal clauses of the Act the Association, in order that the Act might not become a dead letter, has had to take up the disagreeable duty, with the approval of the Medical Council, and it is a gross libel on the Association to allege that it has in any case abused its function or acted in a persecuting spirit. The Medical Council, as a matter of fact, has not yet erased any dentist's name from the Register, as has been alleged, for advertising, but it has done so in one case where a notorious practitioner persisted in this course, although he had signed a solemn declaration on receiving his diploma that he would not be guilty of such unprofessional conduct. If one individual were allowed to defy the law and use professional titles, although not on the Register, it would be impossible to prevent others; and therefore the British Dental Association were compelled to prosecute.—Yours, &c.. M.R C.S., L.D.S.

THE ABUSE OF DENTAL HOSPITALS.

To the Editor of the "British Journal of Dental Science."

SIR,—I have now been in practice as a Dental Surgeon for more than twenty years, and have had ample opportunity of noting the great change and strides that have been produced in the Dental profession.

There are few callings surrounded by more parasites than ours, for we have the Charlatan, the large Advertiser, the man whose door plate bears no name, to say nothing of the myriads of so-called Americans and Aliens of every clime.

I wish no reflection upon the genuine American practitioner, many of whom I have known, to my pleasure, and feel sure that such men as I have met, would not for a moment lend themselves to the "modus operandi" for gaining filthy lucre, such as the locustine hordes of Quacks, who under their name adopt to their own knavish ends.

All must live, and I think those who have worked, and often at great sacrifice to gain a qualification, should at least be deserving of some consideration at the hands of those to whom they have a right to look for protection.

We are now under the wing of the Medical Council, which in itself should be a guarantee for our safety against the inroads of interlopers. Is this so? No! and I cannot help feeling that I shall not be in error when I venture to say, that we were better off before the intervention of the Council's apathetic guardianship.

Reverting again to those who, without law or licence, are hourly taking the bread out of the honest persevering practitioner's mouth, and those of his little ones, let me tell you that this is not alone the greatest evil we have to fight against, for at the most such men can only make the term Dentist a by-word and a laughing stock, and not a pleasurable name to rejoice in, when entering even ordinary society, and cause one to feel that he belongs to an odious calling. You are aware, Sir, that we have two large Dental Hospitals in this mighty metropolis, the outcome of progress,—most laudable institutions they are—and the good work they do is undeniable in point of value.

Judging from their monthly printed reports their operations are exceedingly great in number, and I would not deprive any deserving sufferer the benefits they afford.

Years of experience has enabled me to study the growth of the educated masses, and not a day passes but that well-dressed patients and those whom I know, without stint, could afford a consistent fee, quote the Dental Hospitals, and how much has there been gratuitously done for them.

When I see day after day the work that has been put into the teeth of the undeserving and non-appreciative for "Nothing," I am at a loss to know how the respectable and honest bread-winner of the future will prolong even a half hearted existence.

There is a limit to all things, and it is obvious to thinking men that those patients who present themselves for so many unpaid comforts, should be subjected to a most rigorous test as to their deservingness and their inability to impose upon the donors to such institutions of charity. I am not writing entirely my own views, but the views of many of my brother professionals who would willingly endorse all I have said. I trust the practitioner of the future will never have to reproach himself for having, during his curriculum been too indefatigable as a student of to-day. It is admitted that students in these schools of learning should be afforded every opportunity for gaining the summit of their intellectual ambition and be turned out thoroughly practical members of their adopted profession I would begrudge them naught in reason.

It is not the tool that is used or the metal that is packed that would render the operation successful, but the well-tutored hand and persevering labourer that will produce good results. Why, then, I would ask should tin and the much discarded amalgam, be in such disrepute when precious metal is lavishly and tastefully bestowed upon the unworthy? I now find from those who have been the recipients of hospital favours, that gas is looked upon as a mere toy, and when even a minimum fee is mentioned for its administration, extortion seems the first impress, often followed by smiling and jeering indignation.

The indiscriminate useof nitrous-oxide Gas appears to me no less than an abuse of its valuable properties, unless for several apparently severe extractions, and from my knowledge of general hospital routine, such resort is seldom or never made use of for minor surgical operations. Soon assuredly, general hospitals, if they follow the Dental example, will displace linen and thread by the use of silk with gold attachments and show their philanthropic subscribers to what a shining glory their money may be utilised!

I am,
Yours obediently,
A. W. FURBER, L.D.S.,

Hospital Reports.

Monthly Statement of operations performed at the National Dental Hospital, from August 1st to August 31st, 1888 :—

Number of patients attended		**2507**
Extractions	**Children under 14**	**388**
	Adults	**641**
	Under Nitrous Oxide	**798**
Gold Stoppings		**41**
Other Stoppings		**395**
Advice		**450**
Irregularities of the Teeth		**53**
Miscellaneous and Dressings		**721**
Total		**2938**

E. C. Fisk, ***House Surgeon,*** **pro tem.**

Monthly Statement of operations performed at the Victoria Dental Hospital of Manchester, from August 1st to August 31st, 1888 :—

Number of Patients attended		1134
Extractions	Children under 14	667
	Adults	
	Under Nitrous Oxide	87
Gold Stoppings		15
Other Stoppings		134
Miscellaneous		410
Total		1313

C. S. Smale, L.D.S. Eng., ***House Surgeon.***

BOOKS AND JOURNALS RECEIVED—

Practical Treatise on Artificial Crown and Bridge Work. By George Evans, Philadelphia; S. S. White Dental Mfg. Co, 1888; British Medical Journal; Dental Cosmos; Independent Practitioner; Southern Dental Journal; Western Dental Review; Pharmaceutical News; Medical Bulliton; Journal British Dental Assoaiation; Items of Interest; Dentsche Monattschrift fur Zahnheilkunde.

Communications have been received from—

Mr. Furber, London; C. S. Smale, Manchester; Mr. Fisk, London; Editor of Journal of the British Dental Association.

British Journal of Dental Science.

No. 498. LONDON, OCT. 15, 1888. Vol. XXXI.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By **Dudley Wilmot Buxton**, M.D., B.S. Lond.

Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

Preamble.—Nitrous oxide gas, like many other things and persons, is just now exposed to a great danger, and may well cry "preserve me from my friends." What, with due precaution, care, and sufficient knowledge, is a practically safe anæsthetic has been credited with all manner of dangers and disabilities, which to the tyro seem so alarming, and to involve so high a risk as to render nitrous oxide gas an agent to be dealt with only on rare occasions, and then with the utmost diffidence. This may seem a strong way of stating the case, and the majority of dentists who have for years seen or actually given gas to thousands of persons, will be inclined to question the statement, that very many dentists and still more doctors regard nitrous oxide as somewhat risky, and its application as being justifiable in only a restricted number of cases. I am, however, convinced from my experience as a teacher of both students and qualified men anxious to learn the Shibboleth of Anæsthetics, that this assertion is widely within the truth, and I think that the cause of this state of things is not far to seek. To a large extent the practice of anæsthesia has been and is still a system of rule of thumb, and with the development of the times this empiricism has become invaded by a laudable desire to understand the rationale of the action of chloroform, ether, nitrous oxide, and other anæsthetics, as well as the meaning of the rules (often few enough!) usually followed in their exhibition. The discovery that each of these substances has a well marked physiological action, which, of course, is modified according as it affects healthy or diseased organs, has awakened many to the fact that anæsthetising is not devoid of dangers or responsibility, while a very imperfect knowledge of what the physiological action is, and how practical lessons are to be deduced from it, has tended to produce timidity and disinclination to incur risks, the nature of which are but very imperfectly understood. In the face of such a state of affairs it seems likely to prove useful both to dentists and medical men to consider briefly what are the physiological effects of laughing gas, and then to show what light the knowledge so gained throws upon the question immediately before us, "to whom are we justified in giving nitrous oxide gas."

THE WAY NITROUS OXIDE PRODUCES ANÆSTHESIA.

It would be tedious were I to reproduce in full the arguments I have pretty thoroughly ventilated in another place.* I will, therefore, simply state here, the conclusions at which I have arrived, and must apologize if brevity in statement makes my assertions appear somewhat dogmatic.

Nitrous oxide has been said to act in one or other of the following ways:

a. To enter the lungs and to become split up either during its passage through the pulmonary epithelium lining the ultimate air cells, or after its entrance into the blood, or, even when conveyed to the tissues through which the blood passes. Nitrous oxide is a compound of two atoms of nitrogen with one of oxygen, it is capable of being split up at certain temperatures [N.B. above blood heat] into oxygen and nitrogen, it is uncertain how far other nitrogen compounds could be produced under conditions such as would arise in the human organisms.—In disproof of this hypothetical splitting up of nitrous oxide in the lungs, blood, or tissues, we have Frankland's results, which, although not absolute, show that practically all the gas is recoverable from the lungs, blood, &c., if the exhalations be preserved ; and we have the results arrived at by Bert, Bernard, and others, that oxygen, if taken by itself, fails to produce narcosis ; while Burdon Sanderson, John Murray, Smith Turner, and others, showed that nitrogen as such could not induce true anæsthesia. If, then, nitrous oxide produces narcotism, while its constituents do not have that effect, we may fairly assume it does not undergo a decomposition in the blood or tissues.

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* See Transactions of the Odontological Society of Great Britain, 1886 & 1887, "On the Physiological Action of Nitrous Oxide," by Dudley Wilmot Buxton, M.D., &c.

b. But it was for long asserted, that nitrous oxide acted as a respirable but non-oxygenating gas, that, in short, the anæsthesia occurring under this agent was due to gradual de-oxygenation of the blood, and was really the result of tissue-asphyxia. Now this is not true. In the research quoted above, the writer has shown that if you asphyxiate an animal by, for example, occluding its wind pipe, and narcotise another animal with nitrous oxide, the process of events is absolutely different in the two cases. Of course, in the animal which cannot breathe-air, tissue asphyxia occurs, and so, if the theory cited above is true, it should become anæsthetised ; it does not do so but remains sensitive to painful stimulus up to its death. The same is true if, instead of ligaturing the wind-pipe, the animal is allowed to breathe into a long tube. Again, the action of the heart, the rhythm of respiration, the force of the circulation, are quite different during asphyxia, than under the influence of nitrous oxide. The convulsions of asphyxia are far later in their appearance, and quite different in their character from the clonic and tonic contractions of the muscles brought about by nitrous oxide. Again, the results of asphyxia partial or complete are deleterious, those of nitrous oxide are as will be seen in the sequel, free from any disagreeable or harmful tendency.

c. In the third place it is said that nitrous oxide gas possesses a specific effect, by which is meant that it, like calomel, aconite, salicylic acid, or what not, is capable when introduced into the system of bringing about effects which are not, when taken together, produced by any other body. This view the writer believes to be the correct one, as he has found by careful experimental research that nitrous oxide possesses very well marked physiological effects upon the blood, the circulation, and more especially upon the nervous tissue forming the cerebro-spinal axis. Additional evidence in favour of this view is also offered by the careful researches of the late M. Paul Bert who succeeded in anæsthetising human beings as well as animals, by using nitrous oxide mixed with oxygen gas administered under such increased atmospheric pressure that the tension of oxygen and that of nitrous oxide were equal what would obtain were pure nitrous oxide taken or simple air inhaled. During such an administration, the exhalations being carefully led away by an expiry valve and tube, no asphyxia of any kind could occur, and yet complete anæsthesia was achieved.

THE BLOOD AND CIRCULATION.

Probably nitrous oxide acts both upon the solid and fluid constituents of the blood. In many, if not all, of the experiments made upon animals to test the effects of inhaling this gas, the blood was removed from the creature, and further, no precautions were taken to exclude asphyxial effects, so that the negative results at which McQuillen, Turnbull, and others have arrived cannot be considered as absolutely cogent. If a frog is made to breathe through a tracheal tube, and one limb be allowed to come from under the belljar by a suitably contrived air-tight aperture, and the circulation in the web be carefully noted, not only is the behaviour of the capillary circulation capable of being studied in the vessels, but some idea may be formed of the nature of the morphic changes in the corpuscles. As a matter of fact these changes are too indefinite and too slight for us to lay any great stress upon them and, while it seems probable that the changes which do occur in the corpuscles of the blood under the influence of nitrous oxide, are detectable rather by chemical than microscopic means. The red colour of the non-nucleated corpuscles is of course due to hæmoglobin associated with some gas ; thus, if arterial, oxy-hæmoglobin, if venous, carbonic dioxide hæmoglobin ; we know also, that this hæmoglobin can associate itself with nitric oxide, carbonic oxide, and a few other bodies, and that it alters in colour according as it is in compound with one or the other gas. These compounds vary greatly in their degree of stability, some parting so rapidly with the gas as to render their detection by the spectroscope (the only means of identifying them) a matter of great difficulty. In the muscles of the body there is another colouring matter closely allied to this hæmoglobin, and which imparts to the muscles their red brown look. This colouring matter called myo-globin also forms compounds ; thus there are oxy-myoglobin and so on. It is highly probable that nitrous oxide gas when it has entered the blood becomes loosely associated with these bodies hæmoglobin and myoglobin, and that the compounds are extremely feeble. Blood of animals placed under nitrous oxide gas gives only the evidence of "reduced oxy-hæmoglobin," that is, of oxy-hæmoglobin deprived of its oxygen ; but then we know, that blood shaken up with this nitrous oxide gas and exposed to the air, gives up the nitrogen compound with the most extreme celerity and takes up oxygen. The watery part of the blood also contains a considerable quantity of albuminous substances which appear to facilitate the solution of nitrous oxide gas. So we can thus trace the progress of the gas into the system, and at the same time explain the ready way in which the blood yields it up as soon as the oxygen of the air is allowed an access to the lungs.

Upon the Circulation, Nitrous oxide has most important effects, due, it seems probable, to its specific action upon the nerve centres which govern the movements of the heart, and the expansion or contraction of the blood vessels. In most of the observations which have been published, the effects produced by fear have not been allowed for, while no attempt has been made to eliminate this disturbing factor. The writer believes the results which he published were free from this element of fear since they were derived from experiments made upon a number of persons familiar with nitrous oxide, not at all nervous about its effects, and who took it purely experimentally and without the dread of any impending painful operation. And further, the results obtained were compared with like results arrived at when Mr. G. H. Bailey and the author took gas, results naturally absolutely free from any disturbing element of fear or nervousness.

The healthy heart under the influence of nitrous oxide, appears little, if at all affected during the early stages of nitrous oxide narcosis, when fully under the anæsthetic the rhythm of the beat is slowed to a slight but appreciable extent, the force of the beat is increased, but regularity is maintained. In nervous persons, in children, and in the lower animals, naturally the subjects of fear, there is an initial acceleration with a rather tumultuous action of the heart, but as soon as volition is lost, and the individual is fairly under the influence of the narcotic, the heart resumes its regularity alike of force and rhythm, slows down until its rate is somewhat below normal, while its force of beat is increased. When the inhalation is pushed until respiration ceases, the heart still beats, gradually becoming slower and slower in rate, and weaker and weaker in force until at length it ceases to beat. If respiration be maintained artificially, the heart as soon as atmospheric air is readmitted to the lungs, will resume its regular action and rapidly recover its force. These peculiarities of the heart's behaviour are shown by cardiographic tracings, and to a certain extent by sphymograms of the pulse. In human beings these pulse tracings are more easily obtained than are cardiograms, and they are of value when read by the light of kymograms showing the blood pressure.

(To be Continued)

THE COMMENCEMENT OF MALIGNANT DISEASES OF THE TONGUE, JAWS, AND MOUTH.

By Fred. Bowreman Jessett, F.R.C.S., Eng.
Surgeon to the Cancer Hospital.

(*Concluded from page* 752.)

In the two previous articles I have urged upon my readers the importance of recognising malignant growths springing from the gums quite in their early stage, and have endeavoured briefly to describe how such growths may be diagnosed, and have given a short history of their origin and progress.

In the present article I propose drawing your attention to the importance of examining most carefully all ulcers or tubercles of the tongue, which are so frequently the cause of patients consulting members of the dental profession, on account of their belief that the ulcer or tubercle is caused by a rough decayed tooth, but which in reality is too frequently of a malignant type.

Now the two forms of malignant disease which attack the tongue are sarcoma and epithelioma. The former, a very rare disease, and commencing usually in the body of the organ, need not detain us here; but the latter, epithelioma, is of comparatively common occurrence, and in its early stage it is very difficult to differentiate between it and the several other forms of ulcers which are found to be present in the tongue.

Among the ulcers that are most difficult to distinguish are *Traumatic ulcers*, *Tubercular ulcers*, *and Syphilitic ulcers*; and it will be my endeavour to point out to my readers the best means of distinguishing these ulcers from malignant growths.

In the first place it is somewhat remarkable that the tongue should be attacked by only one form of carcinoma, viz., epithelioma. However, a few isolated cases have been reported where the disease has been described as scirrhus or encephaloid. I have never seen either of these two forms of carcinoma present in this organ. That the amount of induration and hardness around an epitheliomatous ulcer may vary a good deal, and in some cases the ulceration has extended very much more quickly than in others there can be no doubt, but that these were strictly epitheliomatous was proved in the majority of cases by microscopical examination. That epithelioma of the tongue is a tolerably common complaint is sufficiently proved when I state that out of 2,227 cases of cancer occurring in patients at the Cancer Hospital, the tongue was the seat of the disease in 190 or at the rate of 8.5 per cent. Paget found the tongue affected in 6.0 per cent; Van Winnewater in 8.3 per cent; Barker in 16.1 per cent. and Morris in 7.1 per cent.

That this organ should be a favourite seat of cancer cannot be wondered at, indeed, it is only surprising that it is not more frequently attacked, and that the form of carcinoma should be practically limited to epithelioma, for there is no organ in the body which is subjected to such rough usage and from its structure and surroundings one can understand how suitable a ground it must present for the growth of this disease. Has it not its natural enemies? Carious and broken teeth, whose rough sharp edges are constantly wounding and irritating it! The large quantity of tartar which so frequently collects around the teeth is a constant source of irritation. Then again, among outside influences not by any means the least source of irritation, is that caused so frequently by badly fitting plates, or plates made of inferior material. And in connection with this I should like to point out that it is the practice of some people never to remove the plates of artificial teeth from their mouth, by which practice the gums become spongy, foreign matter accumulates under the plate, and the plate itself often becomes completely fixed by the deposit of tartar around it.

A gentleman recently consulted me for a malignant ulceration of his tongue. On examination I found he had a plate tightly fixed by an accumulation of tartar, to his lower jaw, with two incisors and some molar teeth on either side. His dentist told him not to remove the plate, which instruction he strictly observed with the result that he had an epithelial cancer extending from under his tongue and reaching to its tip.

Smoking is another exciting cause of carcinoma of the tongue, more particularly the practice of smoking the short clay pipe. The habit of drinking ardent spirits, especially when taken neat, is another common cause.

Hot condiments, pepper, chillies, and the like, are also pungent substances that may well be classed among the irritants of the tongue.

From the exciting, we may now pass to the predisposing causes, of the disease under consideration. Among these may be classed, age, sex, phthisis, syphilis, and heredity.

"*Age.*" Carcinoma of the tongue, I think I may say, is absolutely unknown in youth; the youngest case of this disease I can find recorded in the case books of the Cancer Hospital is that of a young man aged 32 years, but by far the largest majority were above 50 years, and the average age out of 190 cases was 52 years.

In a total of 133 cases collected by Gose, he found 82 were above the age of 50, and 51 under that age. If then, a patient under 30 years of age presents himself with an ulcer on his tongue, you may be pretty sure it is not malignant, and that there must be some removeable cause which has given rise to the ulcer.

"*Sex.*" Epithelial carcinoma of the tongue is very much more frequent in men than in women. It may be argued that this is very likely to be the case, as men from their habits, are much more likely to have their tongues injured or irritated by smoking, drinking neat spirits, or from syphilitic-ulceration, than women; and, therefore, they are much more liable to contract cancer. Such is not, however, the case, as the disease is often present in men who do not smoke, and are not addicted to taking spirituous liquors or exceed in any way, while women who practice these habits do not have cancer. Cancer, moreover, is much more often the result of irritation of rough carious teeth, and it scarcely can be argued that men are more liable to this form of irritation than women.

On comparing the number of cases in which women were affected with cancer of the tongue, with that in which the diseases were met with in men collected from my case book at the Cancer Hospital, I find there were only 27 women in the 190 cases above referred to, or in the proportion of 1—7. The same proportion was observed in 485 cases collected by other observers, and in 71 cases in women and 414 in men.

"*Syphilis.*" Scars, fissures, and gummata, the result of syphilitic inflammation of the tongue, are like ordinary ulcers or fissures, very prone to become the seat of cancer, especially when they are seated in the border of the tongue. Broken down gummata may also become the seat of cancerous disease. It is said that the smaller, more superficial and apparently less important scars left by syphilis on the borders of the tongue, are more liable to become carcinomatous than the deeper and more striking scars on the dorsum, owing to the much greater irritation to which they are exposed.

It will be seen, then, that the connection between syphilis and carcinoma of the tongue lies not in the syphilitic poison which is present in the blood, but in the ulceration and fissures which so frequently follow syphilis of long standing, and further that these syphilitic ulcers or fissures are not more prone to take on a cancerous action than an ulcer or fissure which may exist in persons with no history of syphilis.

"*Inheritance.*" The same observations I have made in a former number on the effect of inheritance on malignant disease in the jaws, applies here ; but I will again take this opportunity of saying that I am firmly convinced that persons with a family history of cancer are much more liable to contract cancer of the tongue than persons with no such history.

I will now pass on and describe the appearance of cancer at its commencement, and here we are at once met with the difficulty that so many cases of carcinoma of the tongue commence as simple ulcers—or rather simple ulcers take on a malignant action.

The disease then commences usually in one or other of the following ways, all of which sooner or later revert to a common type. A small nodule or warty growth forms just beneath the epidermis, never deeply in the tongue substance ; these nodules are most frequently met with on the tip or one of the edges of the organ,and this form of commencement of the disease is perhaps, the most common ; the disease when once ulceration takes place, extends very rapidly, and the neighbouring glands are attacked quite early in the disease.

Sometimes a small ulcer or fissure is the commencement of the disease, these ulcers which are often the result of a blister, bruise, or bite, do not heal, they are touched with caustic of some sort, which irritates them yet more ; they take on a chronic form, their edges become hardened and elevated, the bottom of the ulcer looks unhealthy and uneven, from this point the disease extends more and more rapidly until it invades deeply into the substance of the tongue.

In another case in the papillomatous form which in the first instance has no appearance of a malignant growth, but looks like and is only an hypertrophied papilla, this either from some irritation or other unknown cause, suddenly takes on a cancerous action and spreads most rapidly and developes into a typical epithelioma. This form is usually met with on one side of the dorsum of the tongue far back. I had a very typical example of this form of the disease lately under my care.

Another form in which the disease commences is very much less common, and is usually associated with leucoplakia. This form is accompanied by a general rawness of the dorsum of the tongue with here and there indurated spots which become ulcerated and speedily implicate the whole of the dorsum of the tongue.

But in whatever manner cancer has commenced it has been abundantly proved that in many instances the warty growth or ulcer was in the first instance unusual in its character : the blister caused by the hot pipe, the excoriation, the result of irritation of a carious tooth are certainly not malignant, yet either this one or the other may, and do often, become the seat of cancer ; it is all important then to bear in mind that although the primary growths may not be cancerous, yet they are capable of becoming so. It behoves us here, then, to examine carefully into the signs by which we may recognise the commencement of cancerous disease.

Ulcers, fissures, or excoriations, when seen in a person above the age of 30 years, should be looked on with suspicion, and if they are found not to heal readily by simple remedies, or after the removal of the cause of irritation, but take on an indolent character, looking like a chronic ulcer, keeping much in the same condition, causing little or no pain or inconvenience in the first instance, but having an hardened base and thickened edges, situated usually on one or other of the edges of the organ, then we may suspect carcinoma. If such an ulcer is still further irritated by the application of caustic, it slowly increases in size, becomes uneven, the edges eaten out irregularly and everted. The induration around its base increases and the patient suffers great pain, in such a case there can no longer be any doubt as to the disease being carcinomatous, and should be removed as early and as freely as possible. In such cases the submaxillary glands become enlarged very early.

Warty growths on the tongue, and these are usually present on the dorsum of the organ, may remain quiescent for a lengthened period, when from some extra irritation they suddenly become inflamed, ulcerate, and take on very quickly a carcinomatous character. The knowledge of this should be sufficient to enforce upon us the importance of removal of every tubercle or warty growth from the tongue of any one over the age of 35 or 40 years, before it has become malignant.

Syphilitic gummata or ulcers occasionally become the seat of cancer, but usually the treatment by anti-syphilitic remedies is sufficient to guide us in forming a correct diagnosis ; if the ulcerated surface does not yield to this treatment, then cancer may be suspected and operative interference should be had recourse to without delay.

Rarely the disease commences in the substance of the organ as a hard lump, and it is often very difficult to decide if this lump is malignant or cystic. I have seen several cases which have presented themselves at the hospital with these lumps in their tongues, which upon introducing an aspirating needle, proved to be an abscess. In all cases then, I would recommend this simple precaution to be taken before giving a decided opinion as to the character of the nodule. The disease when commencing in this form is usually carcinomatous from its commencement.

In concluding these few remarks, I should like to say a few words as to the chief seat of the disease. In 186 cases collected from different authorities the disease was situated on the dorsum of the tongue in 14 cases, on the tip in 13 cases, on the edge of the organ in 99 instances, on the surface in 6, in the substance in 10 cases ; so that it will be seen that in far the largest number of cases the disease is situated on the edge of the organ, and this is pretty much what we might have expected, as here it is that the greatest amount of irritation exists.

The method in which the disease commences in the same number of cases is also of interest. In 77 it commenced as a small crack or fissure, in 40 as a pimple or tubercle, in 25 as a nodule or blister, in 23 as an ulcer spreading from a wound or injury, and in 15 as a general soreness or feeling of rawness. It will be seen that nearly half of the total number of cases commenced as a fissure or crack, while in 21. 5 per cent of the cases the initial stage was attributed to a pimple or tubercle, and 13.5 per cent to a nodule or blister. It is clear then that we should look with extreme suspicion on cases that present themselves over the age of 45 years who have indolent fissures and hard nodules, and should excise such diseased parts as early as possible.

It is not my province here to enter into the further progress of the disease, its early presence in the surrounding glands, or the different operations for the removal of the disease, but simply to draw attention to the extreme importance of dentists cautioning patients who may come under their notice suffering from ulcers, fissures, or tubercles on their tongue, especially if they are over the age of 40 years, not to neglect them, but to present themselves from time to time, and at the earliest appearance of any increase in the ulcer, and to at once consult a surgeon with the view to the early removal of the disease.

A STATISTICAL ENQUIRY AS TO THE RESULTS OF THE IMMEDIATE TREATMENT OF PULPLESS AND ABSCESSED TEETH.

By G. Cunningham, B.A., D.M.D. (Harv.), L D.S. (Eng.)

(*Concluded from page* 891.)

Subsequent Pericementitis.—Of the remaining 45 teeth in which no pericementitis was observed previous to the operation, only four cases in all gave rise to any notable symptoms. Two cases were affected with slight pericementitis lasting about twenty-four hours. The third case was more acute, and much more serious, since the symptoms were severe and did not abate for about a week. As this passed into other hands I was not responsible for the subsequent treatment, but the patient has written to say that the case is now going on well. In this instance the subsequent trouble arose from one, if not from two possible causative conditions—(*a*) The tooth, a left lower molar, had been filled three weeks previously, and underneath the filling there was found a copious discharge of thin grey pus, evidence of a chronic suppuration, filling the otherwise empty distal canal, while the mesial canal was filled with a long putrid cotton-wool dressing; or—

Perforations.—(*b*) an accidental perforation of the mesial root. Observation of the results of such accidents would lead us rather to ascribe the cause of the subsequent inflammation to the former than to the latter cause. While the other case, in which there had been a perforation of the posterior buccal and possibly also one of the anterior buccal roots, gave rise to severe pain probably from the irritation of the oxychloride of zinc filling. This tooth was not at any time sensitive to percussion, while the pain gradually diminished and disappeared in two days. The accidental perforation of the corresponding tooth on the other side of the mouth of the same patient rather indicates considerable irregularity of the roots. Happily, however, it was not accompanied by any disagreeable results.

Another similar accident exhausts the list of operative mishaps in this Class III, and was also provocative of no subsequent trouble. The injuries was not sufficient to demand any special precautions by guarding with gold-foil or the like, as is usually my practice when the perforation of the root is of any magnitude. The case marked "patent" at apex was merely to denote an exceptionally open root. All these cases terminated by resolution and not by suppuration.

"Dry" and "Moist" conditions compared.

TABLE F.—*Proportion of Pericementitis recorded as occurring in case of Dry and Moist Gangrene of the Pulp previous to treatment.*

Condition of the Pulp Canal Contents		No. of Cases.		Previous Pericementitis.			
				Present.		Absent.	
DRY.			15		2		13
MOIST.	Pus absent	18	24	5	9	13	15
	Pus present ...	6		4		2	

From the foregoing table it appears that when the moist condition of the pulp canal contents is associated with pus formation, the pericementum is much more liable to be affected. By including both forms of the moist condition, and comparing the result with the dry condition we find that pericementitis is more than four times as frequent in those cases where the pulp *debris* is moist than in those where it is dry.

TABLE G.—*Proportion in which Pericementitis occurred subsequent to the operation.*

Condition of the Pulp Canal Contents		No. of Cases.		Subsequent Pericementitis.			
				Present.		Absent.	
DRY			13	..	..		13
MOIST	Pus absent	13	15	2	15	11	12
	Pus present... ...	2		1		1	

In this table we obtain a comparison of the same subdivisions of Class III, after discarding all those cases complicated by the presence of previous pericementitis. The relatively more favourable condition of the dry over the moist variety is still apparent, though not so marked. It also serves to show that operative interference is relatively much less provocative of inflammation than that policy of non-interference not unfrequently enforced on the patient by the dental practitioner.

Pulp Contents not noted.—Of the 21 cases in which we omitted to note the character of the pulp contents only one had previous pericementitis, which was almost immediately allayed by the operation, while none of the remaining 20 gave rise to any pericementitis following the operation. It is quite apparent, therefore, that this lack of completeness in the record is extremely regrettable, as the addition of these 21 cases to the others would have very materially diminished the percentage of inflammatory cases in each of the previous subdivisions, though I do not think that I would have materially altered the relative comparison of each sub-division with the other.

If now we sum up all the cases belonging to Class III we find that of the 60 teeth presented, 15 cases were affected with previous pericementitis, and that in 12 of these cases it was continued from one to ten days. Of the remaining 45 cases in which the pericementitis before the operation was absent, only 4 cases gave rise to pericementitis after the operation. It must not be forgotten, however, that all of these cases have been very carefully watched, and the slightest symptoms carefully noted; indeed the symptoms were usually so slight as to call for no special treatment, and under ordinary conditions of practice would probably have escaped notice.

Permanent Crown Fillings.—Of the 60 teeth treated, 41 cases were at once filled with a permanent stopping of gold or amalgam, or were at once crowned. A large number of the cases recorded were roots only, which it was not usually convenient to crown in the same series of visits. In many cases too, a temporary stopping of phosphate cement, zinc oxychloride, or gutta-percha, was only inserted because of the lack of the necessary time for insertion of a permanent filling.

Of the cases recorded under Class III, I operated on 38 teeth, inserting 7 gold, 20 amalgam, and 3 crowns, or 79·5 per cent. of immediate permanent fillings. This immediate insertion of a permanent filling may be an important factor in promoting a rapid and possible permanent cure, since the functional activity of the tooth must be thereby greatly increased.

Of the 60 teeth treated, the rubber-dam was applied in 47 cases. The experience of a large number of cases, especially roots, where its application is often impossible, leads to the conclusion that this safeguard, while always advisable, is not absolutely essential to successful treatment.

SUMMARY.

Having thus considered each class in detail, I have prepared a general abstract in which we are enabled to examine and compare the conditions prior to, and the result of immediate root treatment in the three classes of pulpless and abscessed teeth (Table H.)

Under the head of "Conditions prior to Treatment," I had not the slightest idea that so very large a number of cases were so affected by pericementitis. The presence or absence of such a condition in the three classes occurs in about the proportion we should anticipate. The absence in Class II is perhaps a little suspicious, and may have to be corrected by subsequent observation. I propose to continue future records on the same plan, as an analysis of a larger number of cases would enable us to arrive at more correct results.

The immediate treatment of teeth in such an inflamed condition gives satisfactory results, and an examination of the

Table H.—*Abstract showing the conditions prior to, and the results of Immediate Root Treatment in* 115 *cases.*

August, 1887, *to March*, 1888.

Treatment. —(1) Free excavation of pulp canals. (2) Syringing with $HgCl_2$ 1°/₀ sol.

(3) Root-filling, zinc oxychloride.

Classification	No. of Teeth	Previous Pericementitis		No. of un-inflamed Teeth	Subsequent Pericementitis		Permanent Crown-filling		Rubber Dam		Loss by Extraction	Sub-sequent fistulæ	Fistulæ observed		
													No.	Closed	
			per cent.			per cent.		per cent.		per cent	per cent.				per cent.
I. Extirpated pulps (after cauterization)	34 (23)	6 (5)	17·65 (21·73)	23	1	4·34	26	76·57	33	97	0.	—	—	—	—
II. Abscessed teeth with fistula ...	21	—	—	21	2	9·52	13	61·90	18	85·7	0·	—	16	15	93·73
III. All cases not included in Cl. I and II. ...	60	15	25	45	4	8·88	42	70	48	80	0·	—	—	—	—
Totals ...	115	26	22·60	89	7	7·86	81	70·43	99	86	0·	—	—	—	—

detailed records from which these tables are compiled shows that the relief in many cases was immediate.

Under the heading of "Subsequent Pericementitis" we see that the results compare very favourably with those in the preceding column. As no doubt some practitioners will be apt to forget the frequent sequel of inflammatory conditions under even the most carefully applied dressing method, and therefore be apt to condemn immediate root treatment because of these acknowledged subsequent inflammatory conditions, I desire to point out how the relative frequency is in every class much less than occurs from an operation which they frequently employ, namely, cauterisation of the pulp. Nor must it be forgotten that many of the cases have recorded were of the slightest nature, subsiding without special treatment.

I am quite sensible of the fact that prejudiced minds may possibly compare the tabulation of these more recent and closely recorded cases with the first tabulation which I made on a much larger number of cases, but not recorded with the same minuteness. Instead of debating such a point, let me call your attention to another contrast which conclusively demonstrates my continued—nay, more, my increased confidence in the operation, and that is the number of cases in which permanent fillings were immediately inserted on the conclusion of the root canal treatment.

Permanent Fillings.—The differences between the different classes of teeth under this column is purely accidental. This is shown by an analysis of my own cases separated from these conjoint operations of two operators, the proportions being as follows :—

Period 1887-8.	Class I.	66·6
	Class II.	69·2
	Class III.	79·5
	Average	71·7

A result which compares favourably with the 40·66 per cent. during the year 1886-7, and still more with the 5.26 per cent. during the year 1883-4, under the dressing method.

Were it not for the limits imposed by the convenience of the operator or the patient, there is no reason why even this large percentage might not be increased to the fullest possible extent, as in the few cases where any further operative interference is required it is better and more practical for it to be

TABLE I.—*Relative Frequency of Permanent Crown-filling following on Root Canal Treatment by the Dressing and the Immediate Methods. (Same operator throughout.)*

Period	Method in	No. of Teeth	Permanent Fillings	Percentage
1883—4	Dressing	38	2	5·26
1886—7	Immediate	150	61	40·66
1887—8	,,	66	49	71·7

applied directly to the seat of the lesion through the alveolar wall than through the longer and more restricted channel of the root canal itself.

Lost by Extraction.—The figures under this head will doubtless sufficiently impress you without any remarks of mine, except that I shall consider it my duty to faithfully report any future loss which may be subsequently noted.

Subsequent Fistula.—This column clearly indicates that in none of the cases did the inflammation, even when acute, terminate otherwise than by resolution.

Accidents in the course of the Operation.—Owing to the length of this communication, I propose tabulating the results of such accidents as perforations of the roots, and broken nerve instruments left in the canals, in a short supplementary paper at some future date. I shall therefore confine myself to calling your attention to the generally favourable prognosis which may be made as to the results of such accidents.

Relative liability of the various teeth to be pulpless or abscessed.—We know from carefully collected statistics that different teeth are not equally subject to attacks of caries, consequently it is self evident that they will not be equally subject to being found in a pulpless or abscessed condition, since caries may be taken to be the original cause of the furthur complication in about 99 per cent. of cases.

The analysis of 770 cases which I now desire to present to you may be taken as being fairly typical of the conditions found in modern private practice under even the best conditions, since the majority of the patients are strong, healthy, well-nourished young men between the ages of eighteen to twenty-five. It is interesting to note the relative liability to this condition does not correspond with that to caries.

TABLE J.—*Showing the Relative liability of the various Teeth to be pulpless or abscessed.*

	Upper			Lower		
	Right	Left	Total	Right	Left	Total
Incisors, Central ...	44	32	76	1	1	2
„ Lateral ...	26	24	50	4	—	4
Canines	21	17	38	1	—	1
Bicuspids, first ...	60	63	123	9	11	20
„ second ...	40	52	92	22	14	36
Molars, first	65	60	125	37	53	90
„ second ...	22	18	40	29	29	58
„ third	2	3	5	7	3	10
	280	269	349	110	111	221

Teeth already lost, or those extracted, have not been taken into account. This in some degree must vitiate the result, but not materially so, except in the case of the wisdom teeth, since their functional value is usually not very great, and therefore it has frequently been more to the interest of the patient to apply radical rather than tedious and difficult conservative treatment in such cases.

The upper teeth are more freqently attacked by caries than the lower in the proportion of three to two according to Magitôt, and two to one according to Hitchcock. From this table it will be seen that so far as the pulpless or abscessed condition is concerned, the upper teeth are more liable to be attacked than the lower in the proportion of five to two.

There does not seem to be any special difference between the two sides of the mouth in their relative liability to this condition, and a close examination of the figures only serves to frequently show a remarkable degree of symmetry. The total number on the right side amounts to 280, as against 269 on the left (although the examination of the individual columns, such as the second bicuspid, shows a preponderance on the left side), while the right lower side presents 110 as against 111 on the left.

These tables show a considerable discrepancy between the upper second bicuspid on the right side (40) as against the left (52), and the right upper central incisor (44) as against the left (32), and the right lower first molar (37) as against the left (53).

In estimating the reliability of such details regard must be had to the number of cases recorded, and therefore the record with regard to the lower incisors and canines, as well as both upper and lower third molars, can only be regarded as approximately correct.

As contrasted with the corresponding tables with regard to caries the prominence of the upper bicuspids, especially the first, is sufficiently remarkable, while the improved relative position of the lower first molar seems worthy of note.

An analysis of these 770 cases with regard to the condition of the pulp and the pericementum is shown in the following table :—

Relative Frequency of the Three Classes of Pulpless and Abscessed Teeth. Analysis of 770 Cases.

Number of Teeth	Class I. — Extirpated Pulps	Class II. — Abscessed Teeth with Fistula	Class III. — All Teeth not included under Classes I & II.
770	158	123	489
Per cent	20·5	16	63·5

Presence of Micro-organisms.—I have made a series of film preparations and cultivations in gelatine from a very large number of the cases recorded, but I am as yet unable to make any definite communication as to the results of this microscopical examination. In many cases, however, micro-organisms were conspicuous by their absence. It is therefore apparent that immediate treatment in such cases under the rubber-dam is more completely in accord with the principles of antiseptic surgery than any possible modification of the dressing method. In those cases where micro-organisms are undoubtedly present, their removal is best effected by means of excision, and as under older methods the favourable prognosis is proportional to the thoroughness of this part of the operation irrespective of subsequent procedure or materials employed, provided they are unalterable, or if alterable protected from the fluids of the mouth by an occlusive permanent filling.

Corroborative testimony of other practitioners.—A recent letter from Prof. Hesse, in reply to a request for statistical information, shows that, after an experience of its application and results in 235 cases in private practice from 1884-7, and in 552 cases treated in the Leipzig University Dental Institute from 1885-7—in all, 787 cases—with the known loss of only three teeth, he remains a warm advocate of immediate root-filling.

Prof. Hollander, of the University of Hallé, writing in the Oesterreichisch-Ungarishe Viertel-jahrsshrift für Zahnheilkunde (April, 1888), on what he rather inaptly calls the "Coleman-Cunningham Method," describes the success which has attended its adoption in his own practice.

The numerous articles on this subject in recent American dental literature demonstrates how rapidly the practice of immediate root-filling is making headway.

In conclusion, I must ask you not to consider this paper as in any way exhausting the subject of immediate treatment, but many of the points on which I have not touched will be found more or less fully discussed in my paper read before the International Medical Congress to which this communication must be considered supplementary. A closer examination into the details of the cases recorded and the tabulations of the various classes of pulpless and abscessed teeth have in no sense altered the conclusions at which I arrived in that paper, and which will therefore prove not an inappropriate termination to the present communication.

Contrasting, then, the relative advantages of the dressing method as compared with the immediate method of treatment, I am led to the following conclusions :—

1st—That under the immediate method there were fewer extractions and failures.

2nd—That there were fewer subsequent attacks accompanied by swellings and acute abscess, and therefore the immediate treatment was attended with less pain.

3rd—That it required a considerably less expenditure of time on the part of both the patient and operator, the average time of treating and filling such teeth being considerably under an hour.

4th—That in consequence of these considerations, we were able to treat and were able to save more desperate cases, many of the cases mentioned in the record having large perforations of the roots, while others had been already condemned by other practitioners as utterly hopeless.

5th—That method, rather than medicine, had a good deal to do with results, and that probably the operation would have succeeded equally well in a very large number of cases without any medicine whatever.

6th—That, from the difficulty of diagnosing such cases, it is better to conduct every operation with all antiseptic precautions.

Finally, I must express my deep obligations to the indefatigable co-operation of Mr. Faesch, who has devoted, I may almost say, innumerable hours to the arduous and not very interesting task of preparing the long records of cases from which these tabulations and statistics have been compiled.

"CHRISTIAN SCIENCE" AS AN OBTUNDENT.—Lest our readers should imagine our caption is irreverent, not to say blasphemous, we must explain that a section of society in America arrogate to themselves and their tenets, the title "Christian Science." In our circles, "faith healing" ramps under the appellation of "theosophy," and claims to be able, through the influence of its "physicians" to relieve pain and cure disease. Recently in America a "physician" provided with the armamentarium of "christian science," treated a patient prior to his undergoing the pangs of tooth extraction, with the result that the patient averred he felt no pang at all, but that tooth pulling under such conditions became a joy. We are not at present prepared to say whether the days of laughing gas are numbered, but we conclude that when we next require an extraction we shall prefer nitrous oxide to theosophy.

British Journal of Dental Science.

LONDON, OCTOBER 15th, 1888.

SOME ACCIDENTS IN EXTRACTION.

In the volume of Transactions for the current year issued by the Royal Medico-Chirurgical Society of London, there is reported a unique case of impaction of a foreign body in the left bronchus. The accident, the consequences of which are given in detail in the volume before us, possesses a great interest for dentists as well as supplies them with lessons profitable to study. Although in this particular instance the foreign body was not one which dentists by any accident could allow to fall down their patient's windpipe, yet the results were such as might arise during any extraction. The details of this interesting case may be briefly summarised as follows: a little girl aged nine while sucking the end of her pencil, detached the loose cap used for covering and protecting the point; she appears to have taken an unusually deep inspiration at this instant, probably induced by the fear engendered when she found the cover detached from her pencil. The effect of this was, that she drew the metal cap into her windpipe, where it quickly fell into the left bronchus with the open end of the cap looking towards the trachea. The cap seems to have fitted the bronchus and to have prevented any air from entering the lung. Immediately upon the accident, urgent choking and dyspnœa took place, the child's face grew livid and she appeared at the point of suffocation. However, within a short space of time the urgency of the symptoms abated. Upon the attendance of a surgeon, who was hastily summoned, the child complained only of feeling something in her throat, but nothing could be detected either by the eye, the touch, or the passage of probangs. At this time pain was complained of over the chest, and there was an occasional cough of some violence. Subsequently the cough persisted, but the pain gradually disappeared, and physical examination of the chest revealed a considerable area of dullness over the front and back of the left lung. The left side was found to be smaller than the right, and remained motionless during respiration. As a result of this examination the physician came to the conclusion, that the lower lobe of the left lung was collapsed and airless, due to impaction of the pencil cover in the left bronchus. It was decided that an operation should be performed. The isthmus of the thyroid body was divided between ligatures, and the trachea freely opened, a long curved slender probe was passed into the bronchus and at once detected the foreign body. A pair of forceps having an external grip similar to what are used for intubation of the larynx were introduced, and the blades being expanded the pencil cover came readily away. The sequel was rapid and complete recovery. Fortunately the operation of extracting teeth is seldom complicated by the passage of a foreign body down the trachea into one or other of the bronchi, but instances have arisen, many of which for obvious reasons have not been published, when this unfortunate occurrence has taken place. Both in extracting teeth with and without an anæsthetic, teeth may drop back and either enter the œsophagus which is most usual, or may be drawn into the larynx, here they may be impacted and give rise to laryngeal spasm or passing through that isthmus may enter the bronchus. Cases are also recorded, in which a fracture of the extracting forceps has allowed the beak to be sucked into the air passages, and again similar accidents have arisen from the use of breakable mouth gags. In all of these instances symptoms similar to those narrated in the case above cited, presented themselves, although fortunately the formidable operation of tracheotomy has not been found universally necessary. In a case mentioned in Buxton's "Anæsthetics," a tooth was extracted under gas administered by the dentist himself, and found its way into the patient's windpipe threatening asphyxia. Prompt inversion and the judicious management of the breath by the patient when consciousness was restored, effected the liberation of the vagrant tooth. In general it would seem doubtful whether primary tracheotomy is a measure likely to prove the most beneficial to the patient. Unquestionably if the dyspnœa is so severe as to render suffocation imminent it is pretty sure to be due to laryngeal spasm, and will at once give way to a laryngotomy, an operation, by the way, far less severe than tracheotomy. One of the dangers of inversion is, lest the foreign body becoming loosened from its position in the bronchus should fall back into the larynx, and there, as so nearly occurred in the historical case of Brunel, set up *fatal* spasm. Indeed the safest course to adopt appears to be, if ordinary measures for removing the tooth from the epiglottic region fail, to let matters take their course unless death is threatened by asphyxia, when laryngotomy would seem to be preferable to other surgical procedure. Subsequently to this, inversion may be tried. For our comfort we know that in a large percentage of cases, nature effects her own cure by causing the patient to cough up or expectorate the tooth, and it would seem that when this is not the case, a deliberate secondary tracheotomy is more likely to relieve the patient and effect his cure, than the hurried and sometimes imperfectly planned operations undertaken upon the spur of the moment with inadequate assistance and inappropriate instruments.

RETIREMENT OF MR. THOMAS GADDES.—We have been informed that Mr. Thomas Gaddes, who has for so many years guided the fortunes of the National Dental Hospital, is about to retire from Dental practice, and permanently reside in America. To enable him to receive the good wishes of his numerous friends, arrangements have been made to hold the Annual Students' Dinner of that institution on the 19th inst. at the Holborn Restaurant, Mr. Alderman Rymer will be in the chair.

Health Insurance *v.* Life Insurance.—In the course of the past year we have several times brought to the notice of our readers the many claims which the Medical Sickness & Life Association has upon qualified medical and dental practitioners, and we are glad to find that these benefits are extended to unprofessional as well as professional men by a kindred Society, the Health Insurance Corporation, Limited, which carries on a good work for the benefit of those who are not eligible for, and do not care to belong to the older Society. To men who depend upon their health for daily bread, and, alas, of how many is not this true! some such means of insurance against "rainy days" becomes obligatory.

Campho-Phenique.—This substance is being largely used as an antiseptic, local anæsthetic and vulnerary in minor surgical operations, burns, wounds, and injuries of all descriptions. It is a definite chemical compound of pure carbolic acid and pure camphor, combined in the proportion of 505 parts of the former and 494 parts of the latter in every 1000. It has the formula $C_8 H_{11} O$, and for obvious reasons has received the name of Campho-Phenique. Although containing so large a percentage of phenol, it is absolutely non-irritant and may be used undiluted upon the tenderest skin without discomfort, and causes but a temporary smarting (succeeded by anæsthesia) when poured pure upon freshly cut or lacerated surfaces. It is in daily use in the treatment of lacerated and incised wounds, burns, scalds, painful and parasitic skin diseases, necroses, ulcerations and suppurating processes, etc. It is not soluble in water or glycerine, and should be used pure or mingled with vegetable, animal, or mineral oils or fats. The best form for its exhibition is mingled with one or two parts of lanolin, vaselin, lard or simple cerate. Mingled with pure cream it gives almost instant relief in burns or scalds.

"**Celestial**" **Dentistry.**—The Chinese dentist, to extract aching molars, uses a small iron instrument about three inches long and half-an-inch wide, with a V-shaped cut in one end. With this concealed in the hand, the dentist pushes and pries the diseased tooth, pretending all the while to rub powder on it. When the tooth is sufficiently loosened a quick turn of the hand brings the instrument into play, and the offending member is out. The patient is never allowed to see the forceps, and fully believes that only the thumb and fore-finger are used in the operation. Teeth are never extracted at all among the Chinese, unless they have become very loose. When a person goes to the dentist with a toothache, if the man of science finds the tooth too firmly set to be extracted, he tells the patient that some devil in the form of a worm has got into it. To extract the tooth will be dangerous, but the offending worm can be removed. He then takes a little double headed steel instrument, having a spoon-shaped bowl at each end, and pushes and scrapes about the tooth. One end of the instrument contains a little piece of pith made to resemble a worm, and when the manipulating process has been continued long enough to deceive the patient, the worm is triumphantly produced. No doubt the results are for a short time beneficial. Every one knows that a toothache may be temporarily frightened away by a visit to the dentist, and it is quite as likely that deception may also quiet the nerves into brief submission.

The *Lancet* on the Implantation of Teeth.—The operation of implantation of teeth introduced in America by Dr. Younger, which consists in drilling an artificial socket in the alveolus and inserting therein a natural tooth, has not met with anything like that success which its advocates expected. When commenting on this operation last year we expressed the opinion that the roots would gradually undergo absorption, just as do ivory pegs embedded in bone, and that is exactly what does happen. After a year or two in successful (?) cases the teeth gradually loosen, and, causing trouble, have to be removed. Upon examination the root is found perhaps one-third reduced in size, the cementum in parts completely removed, and the denture excavated out into bays and pits. Microscopical sections of one shown at the New York Odontological Society by Professors Heitzman and Bölecker are described. "An oblique section showed canaliculi with shrivelled dentinal fibres in them. In these bays there were a number of features worthy of attention. There we saw medullary corpuscles, and the so-called giant cells; and there we saw granulation tissues, myxomatous and fibrous connective tissue penetrating the bays, which were supplied with a certain number of newly formed blood vessels. We found here an explanation of the fact that an implanted tooth may be firmly fixed in its newly formed socket; that is, that the granulation tissue had grown into the bays." Even if the tooth should do work for four or five years, which in some exceptional cases it may do, the benefit of the operation is very doubtful.

DENTAL SURGERY AT GENERAL HOSPITALS.—Mr. Pedley's paper which we reprinted in our last issue has provoked replies from Mr. Storer Bennett, dental surgeon to Middlesex Hospital, and Mr. Sidney Spokes, who writes from the National Dental Hospital. Mr. Bennett's contention amounts to saying that dentistry is best taught in a special hospital, just as ophthalmic surgery or any other special subject is most easily handled in an institution devoted wholly to that subject. It is manifestly inconsequent to say that all so-called special subjects are taught well and sufficiently at the general hospitals. There are few general surgeons unless attached to Moorfields or some special Eye Hospital, who would dream of subjecting their patients to the risks of operating for iridectomy, and yet they have had the instruction of the special department of their general Hospital. Another important point which has not been taken up in this somewhat useless discussion is the discipline of the "department" as opposed to the special hospital. The average general student has not the incentive to hard work, attention and regularity, when he simply passes from his general surgical work to what must at the general hospital be admitted to be a side-issue and a by-subject. At the dental hospital are working at the same subject, have kindred interests, common aims, and so emulate one another and thus carry into the force the saying that "to have an effectual police you must make your citizens their own guardians." Read "students" for "citizens" and you will understand the better tone among the reading class of students than what obtains among rowdy ne'er-do-wells.

AN AMERICAN JOURNALIST ON AMERICAN DENTISTS.—"THE trouble with the American dentists who were fined in London courts recently was too much unprofessional publicity. A score of other American dentists here, who went about their work quietly, were not disturbed, though, now that a test case has resulted in favour of the Britishers, the probability is that they will be, unless they find some technical means of evading the law. Only dental graduates from Harvard and Michigan schools are recognized by the British Dental Association. (sic!) If a young dentist from the New York College, or a dentist from any other dental institution except the two mentioned, comes over here to practise, he must take a two years' course. A prominent London dentist said to-day: "This is not persecution of good American dentists, for capable men will not be interfered with; but the average American dentist in London would astonish the Americans as much as the average American bar." We quote the above with a purpose, "American papers please copy." We cannot be so sure of the safety of "good American dentists," for law-breakers, however good, are apt to become entangled by the web of the law. An American Journal, which by the way ought to know better, as it is run under the names of well-known and respectable men, has accused us of American-dentist-phobia, and we beg to bow our heads to the impeachment. When our critic comes across the briny, we shall be pleased to show him a few samples of the "American dentists," towards whom we are "phobic," and if he wishes to extend his brotherly arms to these gentry, why let him, only we shall cease to exchange. For honourable straightforward Americans practising dentistry, and who scorn hanky-panky, we entertain a high regard, and candid readers of the *British Journal of Dental Science* know that fact so well that we need say no more.

THE EXAMINERSHIP IN DENTAL SURGERY AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—We understand that Mr. S. J. Hutchinson has been elected to fill the vacancy created by the retirement of Mr. J. Smith Turner. Mr. Hutchinson has been long known in connexion with the London Dental Hospital, and will be welcomed by the profession as a fit and right exponent of scientific dentistry.

MR. PARTRIDGE AGAIN.—Mr. Partridge, the advertising dentist who was expelled by the Irish College of Surgeons, and who recently had his name removed from the Dentists' Register, seems to have at length caved in. He describes himself "*late* Licentiate Dental Surgery, Royal College of Surgeons," but—as he practises in London—forgets to add the words "in Ireland." Whatever can be urged about this gentleman, his most staunch supporters must admit that for a "penitent" his conduct is peculiar. We, however, attach more blame to the medical men and clergy who allow their names to be used as a cover for a person who has by the laws of his country been declared an illegal practitioner of dentistry. Surely the broad cloth classes, who pride themselves upon their patriotism and love of Queen and State, must find it a difficult matter to salve their consciences about supporting Mr. Partridge who has had his name erased from the Dentists' Register, and so is at present acting illegally by practising dentistry for gain.

Abstracts of British & Foreign Journals.

DENTAL COSMOS.

NATURAL ROOTS AND ARTIFICIAL CROWNS.

By A. G. Bennett, D.D.S., Philadelphia, Pa.

The general tendency of modern dentistry is conservative. Success depends largely on the safe, certain, and thorough removal and disinfection of the contents of the canal and tubuli. The canal is not strictly a cavity to be incidentally filled by crowning. It remains to be seen whether desiccation can in all cases, with or without medicating, make the immediate closing of canals under all circumstances a safe and certain procedure.

It has been truly said that when a vital tooth is alive through all its substance, and when the pulp is destroyed the dentine is dead through all its substance. Here, then, we have a mass of devitalised tissue that the principles of general surgery would require to be removed. Most of the dentine is retained because it is needed for strength. Enlarging the canal not only gives room for anchoring the crown, but a large part of the decomposing organic portion is thus eliminated.

II. The Crown.

Filling finds its limit in the weakness of the tooth tissue that remains; crowning finds its limit in the frailty of the root and the extent of injury to or disease in the periodontal membrane. It is not possible to fill all living teeth, not is it advisable to crown all dead ones; and yet the presence or absence of the pulp makes the broadest distinction between teeth that should be filled or crowned. When any of the anterior teeth are devitalised and discoloured and weakened by decay, a crown is to be preferred to a filling. The colour of a yellowish tooth may be so restored as to harmonise with the gold, but the white or bluish-white teeth are in painful contrast with this material. The first artificial crowns were attached with the so-called " pivots " of wood or metal, which often became real pivots on which the crown turned, as if to escape the impact of mastication. But the original crown was a broken-off natural one reattached by a central pin. At least one modern writer advises the same thing to be done, using amalgam as a "pivot" or anchorage. And he goes still further and advocates the restoring of entire bicuspid and even cuspid crowns with the same material. Such a structure, though faced with "white" alloy, not only does not conceal art, but proclaims its entire absence. The older crowns were failures, and were soon crowded out by the dental plate, which brought in the mechanical age of dentistry. As operative dentistry progressed from stage to stage, the crown reappeared.

About twenty-five years ago or more we had a conservative revival, based on the supposed tooth-saving properties of cohesive gold foil. Too much being attempted, we had, about fifteen years after, the late "New departure" with the old plastics. This being also disappointing, the tooth-crown era appeared, which was marked by the invention of some new forms of crowns and by the improvement of old ones.

1. *The ferrule crown.*—He begins with this crown because it is, perhaps, the best known, and has been in use as long as any not yet laid aside. It has been used and misused. It is at once the most complicated and the most perfect crown yet evolved from the combination of gold plate and porcelain. Some years ago the metallic pin in the canal and base-plate on the end of the root seemed to settle the question of crowning, There are two kinds of ferrule crowns, viz., those made and mounted by the operator and those made by machinery. The latter is the Buttner system, which is theoretically perfect, but practically cannot be nicely generally adapted to any but the centrals. If all roots were sound or nearly so, and the surface of the alveolar process flat, a ferrule made on the die and counter-die principle would be perfect. The ferrule when properly made and adjusted takes the place of the enamel around the neck of the tooth, and if it be nicely bevelled and finely polished, the gum will not feel the absence of the one nor be disturbed by the presence of the other. It may be said in general that all crowns in use have their defects. The ferrule and the "collar" crown, have the widest range of usefulness. As single teeth they are the strongest and give the best protection to the root, and are the only ones adapted to bridging. These and all similar crowns have at least two defects: the porcelain facing with a metallic backing cannot have a natural colour or vital appearance; and it is liable to be

checked or fractured. Unless these facings have been actually checked, they have ample strength to resist even an unusual strain. The metallic backing is not so objectionable in bridge-work, as where there are several continuous crowns, the colour is not contrasted with the natural teeth. It is in single crowns which stand next to vital and translucent teeth that the colour of the plate tooth shows to the worst advantage. It is evident that the all porcelain crowns must be substituted sooner or later for the plate-tooth in such cases, in order to secure the very desirable natural colour and vital appearance.

2. *The Collar Crown.*—The writer first used this crown for front teeth, then the ferrule crown on account of its entirely closed cap and its utility in bridging. Of late he has returned to the collar crown. He makes the collar a little wider and heavier than formerly, and to extend a little farther around the root; and makes the pin a little thicker, and flatten its sides, in order to counteract the tendency to turning, especially when the central root also supports the lateral. Making the collar wider requires that the enamel be scaled from the sides of the root, as well as a slight trimming on its palatal face. When prepared in this way the root is somewhat flattened laterally, which effectually prevents turning of the crown. Made as I have described, the "collar" crown forms an excellent pier or abutment for filling. This crown can be made more quickly than the ferrule. When the palatal extension of the base-plate is so cut and bent as to enclose the collar, these can be united with wax and resin cement, placed in position, the pin inserted and the facing ground and backed; all the parts, being now assembled, are waxed together as before, and invested,—all the soldering being done at one "heat." It will be seen that this saves time and enables the operator to make the crown at one short sitting. This crown is anchored with gutta-percha. The mode of applying this material will be described later.

3. *Cap-Crowns.*—The well-known cap or all-gold crown which is the real Richmond crown, is often applied and misapplied. It is often difficult to adjust to whole or nearly whole teeth, because nature does not make even the worst kind of a tooth so imperfect that a collar which fits its neck can be passed over its crown. And a collar, no matter how finely fashioned, that does not fit the neck of a tooth, will

soon have no neck to encircle. He recommends it for second bicuspids and molars. In adjusting it the main points are these ; it must fit the neck of the tooth closely or be kept entirely away from the gum. Such a crown extending halfway to the gum is much better in every respect than a full crown that has ledges about the upper border. These half caps are used only in bridging, and must be anchored securely, either in under-cuts, or in small cavities.

4. *The All-porcelain Crown.*—The Logan is a typical all-porcelain crown. As respects strength, natural appearance, and convenience in setting, it is greatly superior to any shell crown made separate from the pin and anchored with cement or amalgam. The Brown crowns are also good, those for the bicuspids and molars being much better than those for the front teeth. The Brown crowns when properly and expertly employed possess many most useful features and are not inferior to the Logan, which in many points they resemble. In setting these, the root should be trimmed even with the gum or a little under it all around. After treating, excise or drill off the crown, then take in the engine a half-inch corundum wheel with a rounding edge, and hold it against the centre of the root, which is trimmed until the edge of the gum is reached. It is always well, when this can be done, to press up the free margin of the gum by packing gutta-percha in the canal and over the end of the root. The canal should now be straightened with a Talbot reamer, slightly enlarged with a tapering fissure-drill, and then flattened from before backwards. The ferrule can be used with three crowns,—the Logan, the Brown, and the countersunk. The author's method of uniting the crown to the ferrule can be applied to any root that can be banded, but is especially well adapted to cases of relatively long crowns. The root must be short, and the ferrule should be quite narrow so as to leave all space for the porcelain. The band is made and cemented in position with a hole in the cap or base-plate to admit the pin of a Logan crown, which is then ground in position and attached with gutta-percha in the usual way. The joint is between the gold and the porcelain, which should be ground close, so that the packing will be thin.

Pins or Crown-anchorage.—When nothing but the root remains, artificial crowns are anchored around their necks, or in the canals, or both, the latter method being the strongest and most permanent. The first crowns were made separate from the pins. The screw has always been separate; but since neither the dentine nor any filling material can be made to hold a thread or retain a nut, besides being liable to split the crown, this apparently perfect anchorage has not come up to expectations. There is, however, one form of screw, the How "post," which has proved very serviceable. Again, pins have been split and spread and anchored by filling material, sometimes inside tubes or square boxes that had been cemented in canals much enlarged by decay. It will suffice to say that both these methods are well-nigh obsolete. There are, however, cases in which a tube set in a frail root with very hard cement, answers a good purpose. The most perfect pin is made of platinum and iridium. In crowning, as in anchoring large approximal fillings, we aim to divide the strength of the operation between the tooth-structure and the metal. A slender pin will bend or break, while one too thick will weaken the root. The *shape* of the pin is more important than its bulk. A pin set in cement can be short and square or round; but a pin set in gutta-percha should be long, taper like the root, and oval or flattened at the sides. The improved Logan would be a perfect pin if the sides were slightly rounded instead of being depressed. A canal enlarged and straightened with a Talbot reamer, and carried a little forward and backward with a tapering drill a little smaller than the reamer, can be regarded as properly prepared for the perfect pin. Closely-fitted flat pins effectually prevent rotation of the crown.

Filling or Packing about the Pin.—The first pins were wound with cotton dipped in varnish, which flimsy device may have some years later suggested the debatable root-filling. The wooden pins often became "pivots," and when saturated with moisture became wedges and split the root; yet sterilized wood fills a canal better than cotton. Amalgam is at once the most durable and most objectionable material for crown-setting, it damages the pin and darkens the crown. Zinc phosphate is the best thing for setting ferrule crowns, because it can be forced through a very small crevice, and is quite permanent when protected from moisture. Gutta-percha is the best plastic for bandless crowns for these reasons: First, it can be easily and quickly attached to the pin; second, it fills the canal perfectly and holds the crown very securely; third, it makes the most impervious and imperishable packing for the joint; fourth, when necessary the crown can be readily removed. Crowns must sometimes be taken off in order to obtain room to fill or refil cavities in the adjoining teeth or to insert a bridge; and cases have been heard of where it actually became necessary to re-treat the root, and that, too, whether the case was of immediate or remote crowning. Besides these points in favour of gutta-percha, its well-known qualities of being non-conducting and non-irritating are not out of place in a pulp-canal or an open apical foramen. Gutta-percha in some of its forms has always been considered a standard root-filling, and if a film of it could always be used as a non-conductor under gold or amalgam, all soft teeth could be made more durable and comfortable. When used to set crowns, the merest film is not only all that is needed, but is best in every case. Masses of this material are not desirable, on account of its capacity to absorb the fluids and gases of putrefaction. When canals are much enlarged by decay, zinc phosphate and gutta-percha should be combined in this manner: remove all softened dentine from the canal, leaving the walls rough or slightly under-cut; next thoroughly dry and fill with the cement, then pass through this a tapering and slightly oiled instrument a trifle larger than the pin. When the cement is hard a film of gutta-percha can be worked around the pin and over the end of the crown in the usual manner. Again, gutta-percha, being very slightly yielding, may be regarded as a kind of secondary artificial periodontal membrane, which will tend in some slight degree to relieve concussions and break the force of mastication. To obtain the best results with gutta-percha, these points must be observed: 1. The gutta-percha is put *on the pin*, and not in the canal, except a very little to close the foramen. 2. The pin must be finely barbed on its corners with a sharp knife. 3. The gutta-percha is softened carefully over the flame of a spirit-lamp, and flattened out and quickly worked around the heated pin, both being as hot as can be handled. 4. The pin is now promptly passed into the canal and quickly removed, and gutta-percha added or cut away, until by three or four trials, the exact amount is determined, and the *end of the crown* perfectly covered. 5. The canal is now grooved with a wheel-bur and thoroughly dried by absorbents; hot air is then applied until the end of the root is white and the patient feels the heat, when the crown with the gutta-percha slightly warmed is at once placed in position. If proper care has been taken there will be no excess about the joint to cut away. The packing in the joint should be very thin, and as nearly as may be of a uniform thickness,—a point that should be noted when making trials to determine the amount.

THE DENTAL REVIEW.

HYGIENIC AND SANITARY DENTISTRY.

By E. C. French, Winconsin.

The writer asks ; Shall the future province of dentistry be, as the past has been, a mere restitution of lost parts, and a means of gaining a livelihood ; or shall it be a philanthropic one, in which we shall seek to know the causes producing loss of dental tissue, and the remedies, hygienic or otherwise, which shall in the next generation produce a nation with good teeth. The writer suggests the following, First, contagion should be avoided as far as possible. The mother, with a mouth alive with micro-organisms, may, and no doubt often does, convey the germs of disease by kissing her child. Children should be taught in the home and at school that the first important thing to learn is to keep the mouth clean. Parents must be taught that foods requiring the vigorous use of the teeth in preparing them for the subsequent process of digestion, are far better than those requiring little or no mastication. Children should never be hurried while partaking of their meals, or allowed to engage in their work or sports after eating until they have properly cleansed their teeth. During the period of life in which the teeth are being developed, children are undergoing a process of mental cramming in ill-ventilated school rooms, compelled to swallow their noon day meal without proper mastication, in order to reach the school room at the prescribed time. Everything known to the inventive genius of modern school teaching is used to hurry the development of mind, regardless of that equally important development of body. The intense strain upon the nerve centres caused by overwork prevents normal digestion and the tale is too plainly told in our every-day observation. Briefly, we must have better sanitary surroundings in our homes and schools. All cereal foods should contain much of their outside coating, vegetables should be sound, meats of all kinds should be from the young, vigorous and healthy animal, instead of the broken down and worn out ox, or cow. All animals intended for food should be fattened upon the best of grains, with perfect sanitary surroundings. We should observe the lesson so plainly taught, that nature in providing food for the lower orders of animal creation has not compounded a conglomeration of highly spiced pastry or flavoured ices. He urges that we should educate the people to keep their teeth clean. Parents must be made to understand that it is of more importance to keep their children's teeth cleansed than their hands or faces ; that regular visits should be made to their dentists so that in case superficial decay or irregularities of the teeth exist, affording a receptacle for decomposing food which cannot be removed by the patient, they may be corrected. Our duty is to furnish with and instruct the people, as far as may be, in the use of antiseptics and disinfectants which tend to destroy micro-organisms, and their baneful effects upon tooth substance. Lastly, the dentist should never introduce instruments from one patient's mouth to another without first thoroughly disinfecting them in a solution of carbolic acid, or other known germicide. In fact, everything about the dental office, which in any way might convey germs from one patient's mouth to another should be thoroughly antisepticised before using.

PACIFIC MEDICAL & SURGICAL JOURNAL.

TRANSPLANTATION OF BONE.

By H. M. SHERMAN.

THE writer briefly reviews this important and interesting matter and reports two apparently successful cases.

He regards the following as essential : That a perfectly healthy bed of granulations must first be secured—preferably, by means of iodoform gauze packings. The grafts should be taken from the bone of some young and rapidly-growing animal, and from as near an epiphysis as possible, that the utmost vital action may be secured. They should consist of both bone and periosteum, and perhaps even cartilage of ossification may be of advantage. Their maximum size should not exceed one-third of an inch in length and one-quarter of an inch in breadth. Grafting has been successfully done with human, kid and dog bones. These are probably the best sources. The grafts should be so planted that they will have free vascular connections on all sides, for such was their condition before transplantation. This may be accomplished by incisions into granulation beds. The grafts must be held down by *moderate* pressure, so that they shall not be forced from their situation by newly-forming granulations.

Strict, but not too powerful, antisepsis should prevail, so that the discharges may be kept at a minimum and sweet.

The dressings should not be changed more often than is necessary to secure this desideratum, hence, should be large and very absorptive.

Literary Notices and Selections.

THE DECIDUOUS TEETH: THEIR ERUPTION AND REMOVAL.*

By C. N. Peirce, D.D.S.,

Professor of Dental Physiology, Dental Pathology, and Operative Dentistry in Pennsylvania College of Dental Surgery.

THAT the evolution of human dentition has, in common with the dentition of other mammals, been from a simple and homogeneous type to a more complex and heterogeneous one, both as regards structure and form, is established beyond a doubt; and in this modification of tissue from the simple to the complex, and its arrangement, nutrition and the *dietetic* habits have been accepted as important factors.

In considering intelligently the origin and peculiarities of mammalian teeth, and what might constitute a primitive mammalian dentition, it would seem quite necessary to have some definite knowledge of the teeth of the mammalian ancestry, and from these note the gradual change.

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* (Read before the American Dental Association at Niagara Falls, August 4, 1887.)

If, as has been suggested, we are limited in our choice to the Batrachia and Reptilia as mammalian progenitors, then to these animals must we look for our most primitive tooth-forms. These we find consisting of cone-shaped anchylosed crowns, the number large, uncertain, and frequent, and the succession almost endless.

Accepting the "placoid scale" or the "dermal denticle" as the structure from which all teeth were primarily derived, we have these teeth of the Batrachia and Reptilia as a step in advance, while in certain of the Reptilia a still further progress is made in the implantation of the teeth in distinct sockets, with the addition of a cingulum or an abortive cusp on the crown, and a tendency to bifurcation of the roots by flattening and longitudinal grooving.

From these primitive forms, with numbers and durability so varying, there is much room for modification before we reach the scalpriform incisors of the Rodentia, the trenchant sectorial tooth of the Carnivora, and the broad grinding molars of the Herbivora, or the less specialized and comparatively fixed in form and number teeth of man. The uncertainty in the number and in the succession of the teeth of the Reptilia as compared with the two sets and definite numbers of the higher mammals has led to much conjecture regarding the origin of this definiteness, and to an effort to determine whether the deciduous or the permanent set is entitled to the credit of priority in its evolution; or, in those mammals which have but one set, whether it is the permanent or deciduous which has been lost.

Prof. Owen, in his effort to express concisely the conditions of replacement, made use of the terms "diphyodont" and "monophyodont," and applied them as relative and interchangeable terms with "heterodont" and "homodont," believing that animals having two sets of teeth (diphyodont) had teeth differing in form and complexity in the several localities in the mouth (heterodont), while those having but one set (monophyodont) had teeth of similar form occupying the inferior and superior maxillæ (homodont); but to this rule many exceptions have been found.

Dr. Wortmam, in speaking of the relationship of the deciduous to the permanent set, asks: "Are they, the deciduous teeth, superadded embryonic structures similar to the amnion and allantois, which subserve a temporary purpose and disappear with approaching maturity, or are they to be homologized with the first set of teeth of the lower vertebrates?"

The very rudimentary condition of the milk or deciduous teeth in some mammals is evidence of their transitional character; and if it is true that tissues most recently developed are frequently the first to be atrophied, it would seem that these were superadded structures. On the other hand, we must recognize the fact that the enamel-organs of these deciduous teeth arise *de novo* from certain portions of the lining membrane of the oral cavity, and that at a period in their progressive stage of development, by a process of budding, the enamel-organs of their permanent successors arise from the necks of the enamel-organs of the deciduous teeth, just as those of the temporary set do from the epithelial layer of the mouth. Another fact in this connection must also be noted, viz., that the germs of the first permanent molars by their *de novo* origin stand physiologically in the same position as the more anterior deciduous teeth, and that the germ o the second permanent molars arise from those of the first, and the third from the second, just as do the germs of the permanent anterior teeth from the enamel-organs of their predecessors.

In noting the origin of the first permanent molar, Dr. Wortman says: "There is one thing upon which I would strongly insist, and that is, that the first true molar in the human dentition is a persistent milk molar.

In following the developement of the deciduous teeth from the appearance of the epithelial eminence, the epithelial inflection, and the epithelial bands or enamel-organs, we recognize various progressive changes in the germinal tissues between the seventh and the seventeenth week. Modifications are taking place during this period in the embryonic structures for the developement of the twenty temporary teeth, and, commencing about the fifteenth week, for the developement of what is recognized as the first permanent molar. From the seventeenth week these rudimentary structures for the temporary teeth begin to assume on their prospective coronal extremities the shapes of the future crowns; and as the process is completed by the developement of ameloblasts for the enamel and osteoblasts or dentinoblasts for the dentine, the solidifying process commences by the deposition of the salts of lime in these previously prepared tissues. This process goes on, probably not without temporary interruption, until the crowns are completed, the incisors at about the fortieth week of fœtal life, or at birth, the molars and cuspids when the infant is not more than six months of age.

At this time the crowns are advancing toward the mucous surface, facilitated by a threefold action, viz., the elongation of the dental pulp, the calcification of its surface to form the dentine of the root, and the adhesion of the dental sac or follicle to its solidified periphery. This last process places the cemental germ or matrix in position and stimulates it into functional activity, for until this period we have only had preparation for the developement of two of the hard dental tissues (enamel and dentine) ; but with the cement matrix in position germinal developement is completed, and growth henceforward progresses, modified only by accident or systemic and nutritional conditions.

This gives us, at about the twentieth week of intra-uterine life, the deciduous tooth-germs with their partially-calcified tissues incased in bony crypts, which have been calcifying in the form of septa between the developing germs.

Inclosed first in a sac, the outer layer of which becomes ossified, the calcified tooth-crown, with its primitive structures and elongating root, is completely surrounded by a bony structure, each tooth in its own individual apartment, and occupying it so fully that room for growth can only be secured by the absorption of the superimposed tissue.

The inferior mandible shows an irregularly calcified groove, ossification of the septa being at this period of embryonic life in a delicate and imperfect condition. The superior jaw has a similar appearance, with septa more decided, though the structure is not so readily displayed. The teeth, removed from their incasements, represent the exact extent of calcification ; the incisor crowns having attained about two-thirds of their normal length, while the cuspids and molars have little more than formed their cusps.

The superior centrals, both above and below, have the process absorbed from their labial surfaces, while the palatal and lingual surfaces are still covered by a border of the alveolar process kept prominent by the crypts which contain the germs and partially calcified crowns of the permanent successors.

The absorption of the superimposed tissue from the advancing crown, and the elongation or growth of the root by an increase in the pulpy mass or formative tissue, and its calcification, are the progressive developmental processes which we term "eruption of the teeth." While we shall not now discuss the propriety of the term used to express this physiological action, it is a pertinent inquiry whether "eruption" is an appropriate name for the process under consideration.

The force by which the teeth are propelled toward and through the mucous surface into position is thought by many to be something in addition to that indicated above as the result of normal growth. However this may be, there are occasional aberrant or abnormal results which this theory will not explain, viz., teeth erupted at birth or a few weeks after which teeth are not further developed than normal, yet the crowns are exposed as fully as if calcification were complete such teeth being without further attachment with the subjacent tissue than the adaptation of the gum to their necks, while the uncalcified pulp is in juxtaposition with the base of the crown or of the abortive root, as the latter may have been more or less developed.

Such premature eruptions are usually found in children suffering from improper nutrition or other abnormal systemic conditions, and are independent of the force resulting from normal growth. The question at once arises, whether such premature presentation of the tooth-crown is not only due to an absorption or wasting of the superimposed tissue, rather than to the elevation of the crown, which could not well take place without growth of the root, unless it were from the contraction or an expulsive effort of the tooth-follicle.

Charles S. Tomes, in his "Dental Anatomy," p. 191, in speaking of this elevation of the tooth-crown, says: "Very strong objections have been brought forward, clearly proving that this cause (elongation of the root) is quite inadequate to explain all that may be observed. In the first place, teeth with very stunted roots, which may be practically said to have no roots, are often erupted. Again, a tooth may have the whole length of its roots completed, and yet remain buried in the jaw through half of a person's life, and then late in life be erupted. Moreover, when a healthy normal tooth is being erupted, the distance travelled by its crown materially exceeds the amount of addition to the length of its roots which has gone on during the same time."

(*To be Concluded.*)

Reports of Societies.

BIRMINGHAM DENTAL STUDENTS' SOCIETY.

The Annual Meeting of the above Society was held at 71 Newhall Street, on Thursday, September 27th, Mr. Frank H. Goffe, L.D.S., in the chair.

The minutes of the previous meeting having been signed, Mr. P. T. Naden (Hon. Sec. for the past year) read the Annual Report, first commenting very favourably on the attendance at the meetings, though the Society and not largely increased in size, owing to the small number of new students.

On November 23rd, 1887, a paper was read by Mr. Naden, entitled "Dental Caries; its Causes and Pathology,"—this was followed by a brisk discussion.

January 24th, 1888, Mr. Charles Sims gave a very interesting account of "Ancient Dentistry," exhibiting at the same time a large number of specimens.

February 23rd, Mr. E. C. Sims gave a paper named "A Brief description of the Permanent Teeth," and Mr. Naden showed some models of various cases of Cleft Palate.

March 29th, 1888. Two papers were read; one by Mr. W. J. Royal on "The Salivary Glands, and their Secretions," the second by Mr. W. Palethorpe L.D.S. on "Alveolar Abscess," with many carefully executed illustrations, demonstrating its various stages, at the close of this meeting a "Social Evening," took place at which many friends of members were present, and the proceedings were unanimously voted a great success.

The Treasurer then brought forward the balance sheet which showed very favourable results.

A vote of thanks to Mr. Goffe and the retiring officers concluded the proceedings.

The following officers for the Session 1888-89 were then elected, viz., President—Breward Neale Esq., Vice-president Frank E. Huxley Esq., Treasurer—Mr. W. J. Royal, Members of Committee, Messrs. P. Naden, G. Foster, and E. C. Sims. Secretary,—Mr. J. Ernest Parrott.

Dental News.

VACANCY.

The Dental Hospital of London, Leicester Square. The post of Demonstrator of Mechanical Dentistry is vacant. Application to be made to the Dean.

APPOINTMENT.

Mr. H. Charles Smale, L.D.S., Eng., D.D.S., has been appointed to the Vacancy on the Staff of the Victoria Dental Hospital, Manchester.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

THE TEACHING IN DENTAL HOSPITALS.

To the Editor of the "British Journal of Dental Science."

Sir.—Referring to Mr. Furber's letter, published in your last issue, he calls attention to the amount of operations done and materials used for patients who apparently could well afford to pay the fees of men struggling to make a practice. These patients justly should go to these men, who are working for a living, and be refused attention at charitable Institutions. I agree with him entirely on this point, and think that some one with an amount of discrimination should first enquire whether a patient is genuinely entitled to the benefits of the hospitals, and if not, I suggest the patients should be shown the full list of names and addresses of all past students of that hospital who have qualified and started in practice. They would in this way be enabled to obtain the skill they require without paying too large fees for it and undoubtedly as the practitioners got on in the world they would refuse these cheap cases and get their names erased from the list to make room for beginners and no one would be favoured. There would still be plenty of poor patients for the students to obtain all the practice they could wish. Whilst writing on the subject of Dental Hospitals, I wish to call particular attention to their monthly printed reports, and the number of teeth extracted in proportion to the teeth saved.

In the report of the National Dental Hospital for August, 1439 adult teeth were extracted (798 under nitrous oxide gas) to say nothing of the 388 for children under fourteen, but 1439 were extracted and only 436 filled, of which 41 were filled with gold, (10 per week.) What is to become of the teeth of the poor, when 1400 per month are sacrificed to the forceps at one hospital alone!

Surely some of these should have been saved. Anyone who has seen the workings of the American dental hospitals, reading these proudly published reports, must blush for the country whose best skill is not able to save more than 2 out of every 6 teeth that come to the hospital.

I know it is sometimes difficult to induce hospital patients to submit to having teeth filled, but it is for their benefit, and very little argument prevails on them in the majority of cases, as I have found. Besides it is the difficult work that teaches the students to take their position as fine operators, and the examples they receive in hospital are the ones they look up to, all their lives, and a fine example it must be to them, to see thousands of teeth extracted that could and should be saved. What kind of operators will these men be when they start in practice for themselves? They cannot value their patients' teeth, nor look with abhorrence on anyone who ruthlessly extracts them, nor will they endeavour to perform difficult operations to save teeth. If the reputation and skill of English dentists is to be raised, this immense sacrifice of teeth must be put an end to.

In America many dentists never extract teeth at all, but send patients who require teeth extracted to men who make a specialty of those operations. If that plan were generally adopted here, dentists would think twice before they sent their patients away. The isolated report of the one hospital I quote shows the average of teeth saved at the two London Hospitals, but the reports from the country hospitals are even worse. Like the man who told his son "honesty was the best policy—he had tried both" so I have been in the London Dental hospitals, private practice, and I have also had a thorough insight into the workings of hospitals on the other side of the Atlantic and there is a marked difference in this respect. What I should like to see published is the number of the following operations—

How many nerves capped
" " destroyed
" dead teeth treated
" roots filled
" abscesses cured.

We should soon see how the students were progressing. The ability to make a pretty looking gold filling should not be the height of ambition of a student, but in my judgment the above operations are the foundation on which good and careful work can be built and the care, patience, and dexterity called for, are the best training for any student.

I feel sure this subject only needs ventilation to receive attention from the authorities. The importance of the careful training of the future generations of dentists must be my apology for trespassing on so much of your valuable space.

Yours obediently,
C., L. D. S.

THE ABUSES OF HOSPITALS.

To the Editor of the " British Journal of Dental Science."

SIR,—In your article on the "Abuses of Hospitals," you, in a measure, seem to lay the blame at the doors of the Institutions themselves. Now their bye-laws clearly say that they are only for the " poor and needy." but it must be obvious, that the better the social condition of the patient, the more pleasant it will be for the student. He, however, is given his patient by the House Surgeon, and with this official, therefore, must rest the blame, of the "*swell*" patient's admission. At my "Alma Mater," to attain this position, a student graduates through the posts of "Deputy," of "Junior," and of "Senior Assistant House Surgeon." Let us call them respectively the egg, the caterpillar and the chrysalis state, and after remaining in each of these conditions six months, at last emerges a fully developed House Surgeon, who gathers honey (a tiny wee drop) for another six months. Though so short lived in his perfect state, the poor fellow has worked hard for two years, and in return receives a handsome (?) salary, at the rate of £12 10 per annum. Whilst fully recognising the professional training the post offers, including an insight into commercial transactions in selling "sheets of gold," how can any but those who are waiting till of age to go up for their examination, endeavour to obtain this post? And it is most pleasing to imagine the blushes etc. of those young men tackling ook looking would be patient on the ground that she is neither "poor" nor "needy."

Is it not apparent that reform is needed? Why could not two or more House Surgeons be appointed each having distinct duties which they could exchange from time to time? Many who have just passed the L.D.S. would willingly accept the post without any pay, and surely then the Hospital and School could afford to appoint an official over these—call him "Surgical Superintendent" or what you will—who should be elected for a year with right of re-election—who should have a medical qualification (as well as the L.D.S.) so as to bear the onus in emergencies, who being older would have more control over students and patients, and who would be paid at a higher rate than the "Scullery-maid."

Yours obediently,
A STUDENT WHO LIKED NICE PATIENTS."

AMALGAM FALLACIES.

To the Editor of the British Journal of Dental Science.

Sir,—The excellent remarks by Dr. A. Morsman in your Journal on "Amalgam fallacies," induces me to repeat what I stated years gone by in your Journal, that a good amalgam is *made better* by having a good working with *plenty* of *mercury*. For over thirty years my recommendation has always been, "do not be afraid of mixing with plenty of mercury, it makes the stopping much stronger than if you use a limited quantity." I have found when I squeezed out the mercury well after mixing, a more thoroughly binding body, I might term it *a tough mortar*, but while I advocate plenty of mercury, I would advise the amalgam to be pressed in leather or cotton till it is *comparatively* easy, there is no fear of its not consolidating in the cavity, but I think the system not good of pressing out the mercury when it is in the tooth. To prepare mercury so that it shall be pure and free from lead and antimony, throw it into a mortar with a handful of wheaten flour, work it well up with pestle till the flour becomes discoloured, remove flour and replace it with fresh, thus it will soon show very little discolouration. Several of my old patrons do this, but the hint would be useful to the young members of the profession. As regards purifying mercury by electricity, one cannot help smiling at the assertions. If after my cleansing process, the operator places the discoloured flour under a glass, he will perceive impurities that no electric process would destroy,

I am yours &c.,

F. H. HALLAM.

117, Lisson Grove.

AMALGAM FALLACIES.

To the Editor of the British Journal of Dental Science.

SIR,—Dr. A. Morsman gives his opinion that the accumulated knowledge of all careful experimenters, and their observed results, are simply "fallacies." By what method he arrives at this extraordinary conclusion he does not explain, but he makes a number of statements which do not correspond with the experience of any one who has ever made experiments with sufficient care to be able to verify a result.

Amongst Dr. Morsman's "fallacies" he states as facts that zinc is no use in a dental alloy, that squeezing out some of the unknown metals from any unknown alloy will be an improvement, that gold is not of the slightest value, platinun is totally worthless; he "thinks," but evidently is not sure, that "copper is not a fallacy," and is quite sure, that the sphenoidel tendency is a myth, that "pure silver amalgam will not set," and many other discoveries which prove that the recorded experiments of all careful observers during the last twenty years are utterly valueless as compared with his own opinion.

There is one thing which is not a "fallacy." and that is if Dr. Morsman had commenced with some knowledge of the material he writes about, and had made some careful experiments his paper would never have been written. Judging from the nature of the statements made, it would appear that he is so slow an operator that the first and most important part of the setting or hardening of an amalgam is over before he commences to use it, this would account for his failure to observe the setting of fine silver and of alloys containing platinum, other points which he has not observed have been so fully proved by so many independent and careful observers, that the simple opinion of one person who has not observed the facts, cannot be of any importance.

THOS. FLETCHER.

Warrington.

Hospital Reports.

Monthly Statement of operations performed at the Dental Hospital of London, Leicester Square, from Sept. 1st to Sept. 30th, 1888 :—

Number of patients attended		
Extractions	Children under 14	519
	Adults	1145
	Under Nitrous Oxide	675
Gold Stoppings		114
Other Stoppings		403
Advice		171
Irregularities of the Teeth		33
Miscellaneous and Dressings		197
Total		3257

Geo. Seymour, *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of September, 1888 :—

Number of Patients attended		947
Extractions	Children under 14	818
	Adults	
	Under Nitrous Oxide	69
Gold Stoppings		52
Other Stoppings		90
Miscellaneous		248
Total		1277

Charles H. Smale, L.D.S., Eng., *House Surgeon.*

ANSWERS TO CORRESPONDENTS.

"Registration in Victoria."—This is a matter entirely in the hands of the Council, and we think at present sufficient time has not elapsed to hear from the antipodes. It will be advisable to wait a little longer. If you do not hear before the end of the year then write again.

British Journal of Dental Science.

No. 499. LONDON, NOV. 1, 1888. VOL. XXXI

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By DUDLEY WILMOT BUXTON, M.D., B.S. Lond.

Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

(*Continued from page* 932.)

THE rhythm of the heart, that is to say, the number of beats per minute is unaltered by nitrous oxide gas. This statement is at variance with what is usually given in text books, for the reason that patients about to be operated upon, are commonly more or less under the influence of fright or nervousness, a state which quickens the action of the heart. If the hand be placed where the thrust of the heart can be felt when a patient is about to be anæsthetised by laughing gas, the following phenomena will be observed. The heart beats quickly just before the anæsthetisation, and when the face-piece is applied this rhythm is still further accelerated, so that a heart which normally beats seventy-five times per minute will reach eighty, or in some cases ninety, or more, beats per minute. Considerable perturbation of the rhythm as far as force is concerned will sometimes occur, thus, the heart-beat may be full and forcible for a few beats and become poor and weak for the succeeding beat or two, to become again forcible, and so on. As soon as the person has taken several deep inspirations of nitrous oxide, the heart will gradually resume its normal rate of beat and regularity of force, and this apparent slowing and diminution of force will, to those unfamiliar with the action of nitrous oxide, excite alarm. Of course, since the acceleration and perturbation of the heart's action being the result of fear and not of laughing gas, the resumption of of the normal heart-beat is a good, and not a bad sign. Later on in the narcosis, when the patient is passing profoundly under the influence of the gas, a further slowing takes place, a slowing which brings down the rate of beat to slightly below the normal range. This final slowing of the heart's rhythm is unaccompanied by any material change in the force or regularity of the heart's action, the pulse remaining regular and quiet. It is of the utmost importance to remember that when warm-blooded animals are allowed to die by prolonging the administration of nitrous oxide to a fatal extent that they do not expire from syncope, but that the heart beats on smoothly and regularly until respiration ceases, when it also comes to a standstill. In an analysis of the reported deaths which have been attributed to nitrous oxide, which will be given later, it will be seen that in no case did the heart fail whilst under the influence of the gas,—corroborative evidence of considerable value in this connexion.

The effect of nitrous oxide upon the heart may also be studied by examination of pulse tracings, care being taken to avoid the fallacies of fear, &c., to which particular reference has above been made.

In Fig. I. is seen a normal pulse trace. It shows perfect regularity of force and rhythm, the tidal wave, and absence of dicrotism.

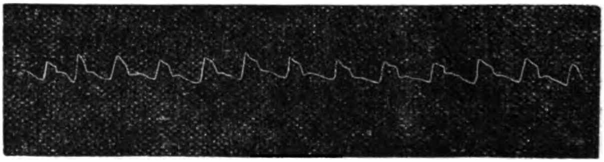

Fig. I.

In Fig. II. we have a sphygmogram of the same patient

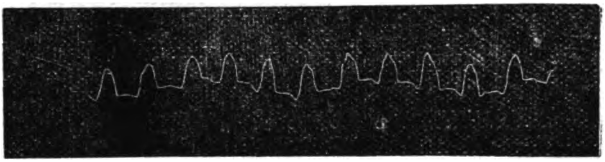

Fig. II.

when completely under the influence of the gas. There is no weakening or sign of a depressed cardiac action, although the trace does show very conclusively that a considerable change has taken place in the arteries. Thus, we see that the tidal wave is no longer to be detected, while marked dicrotism of the pulse is revealed. From these features, which are too constantly present to be attributable to mere individual peculiarity we judge that the arterial tension is lowered. That this is really the case is further demonstrated by the blood pressure experiments, which were made upon a subsequent occasion, and to which we shall revert later on in this paper. It may here be again repeated that this series of sphygmograms is but one of very many, all of which agree in their main features.

In Fig. III. the same pulse is delineated at a time when the patient had ceased to inhale the nitrous oxide, and was resuming consciousness. It shows a gradual return of the normal pulse trace, the dicrotism being less marked and the tidal wave being evidenced towards the close of the trace.

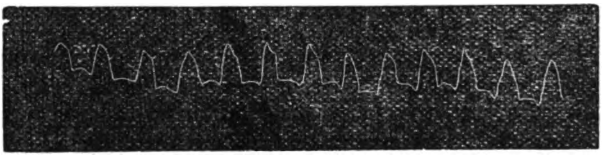

Fig. III.

In Fig. IV. this change to the normal is further advanced, and the tidal wave has become fairly well marked.

The next series of sphygmograms shown in Figures V.,

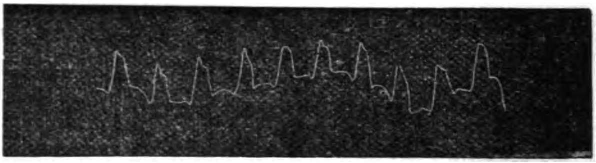

Fig. IV.

VI., VII. & VIII., are taken from another individual, and reveal precisely the same procession of events. Thus, Fig. V.

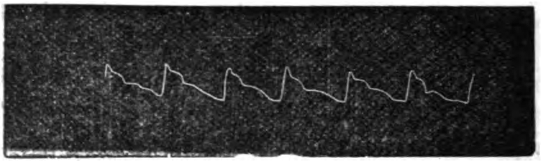

Fig. V.

gives the normal pulse, which in VI. has lost the tidal wave, and shows a decided pointing of the apices and exaggeration

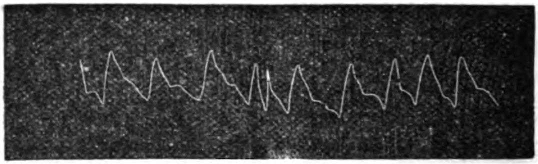

Fig. VI.

of the respiratory curves. Here, again, is evidenced lowered arterial tension.

In Fig. VII. we have a trace taken when the patient no

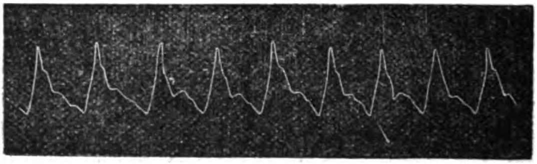

Fig. VII.

longer inhales gas and is resuming consciousness. In Fig. VIII. the normal pulse has been re-established. The

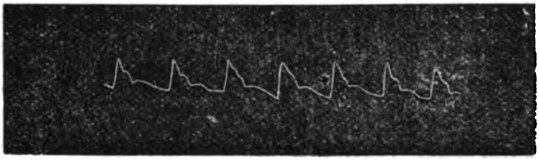

Fig. VIII.

individual from whom these tracings were taken recovers with considerable celerity.

In Fig. IX. the trace must be read from the second pulse beat, as the instrument "jumped" at the first beat. It shows a variety of a normal beat giving tidal wave, well marked aortic notch and dicrotic wave.

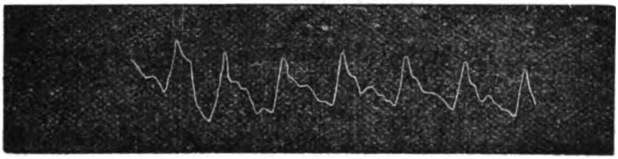

Fig IX.

In Fig. X., and more particularly in Fig. XI., the changes effected in this pulse by the action of nitrous oxide are well shown. There is a considerable acceleration of the heart's action, but no evidence of weakening or irregularity; and although the pointing of the apices and the diminution of the

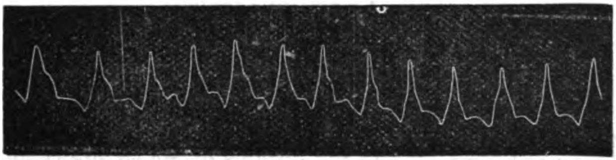

Fig. X.

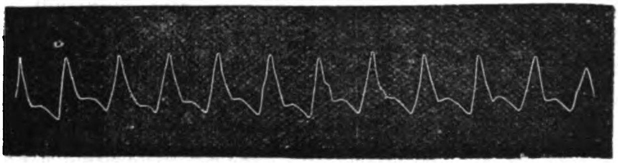

Fig. XI.

tidal wave show a lowering of arterial tension, yet a very fair "tone" is maintained in the arteries. The dicrotic wave seen in the initial trace, is delayed under the gas, its later occurrence being judged from its increased distance from the apex of the trace. Summing up we find (1) the heart's action is little, if at all, interfered with in the early stages, while quite at the close of an inhalation its action is slowed (no doubt through the sedative action of the nitrous oxide upon the medullary centres), (2) regularity of the heart's action is maintained, (3) the arterial tension lowered, although only to a slight extent.

To this statement we shall have later on to make an exception, for the cerebro-spinal circulation appears to be affected in a somewhat different fashion to that which obtains in the general systemic arteries.

The blood pressure* of an animal fully under the influence of nitrous oxide gas shows a slight but constant lowering, a lowering which occurs soon, and remains almost constant until the nitrous oxide narcosis passes into asphyxia, (*i.e.* if the animal is allowed to die under the gas), when a rapid rise of blood pressure occurs. It is a noteworthy point that in every particular nitrous oxide differs in its effects upon the heart arteries, and blood pressure from what obtains in asphyxia.

To be continued.

DR. OLIVER WENDELL HOLMES ON DENTISTRY.—"Dentistry," he said, "has established and prolonged the reign of beauty; it has added to the charms of social intercourse, and lent perfections to the accents of eloquence; it has taken from old age its most unwelcome feature, and lengthened enjoyable human life far beyond the limits of the year when the toothless and poor blind patriarch might well exclaim, 'I have no pleasure in them.'"

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* "In all arteries the blood exerts a certain pressure upon the walls of the vessels which contain it. This is generally spoken of as arterial pressure, and the pressure in the aorta of any animal is usually spoken of as its blood pressure."—*Michael Foster. Handbook of Physiology.*

"IRREGULARITIES AND THEIR TREATMENT."*

By Mr. A. Black.

Mr. President and Gentlemen,

The subject for our consideration and discussion this evening is one, the importance of which can hardly be overestimated in its relation, not only to the rapidly increasing number who from time to time seek our interference with the irregularity of their teeth, but to ourselves also, in our practice as dental surgeons.

As has before been frequently observed, a very large amount of our future success depends on the ability, ingenuity, and patience exhibited in our treatment of the many varied and complicated cases of irregularity in young people. A naturally irregular lot of teeth lacking the slightest appearance of order, giving one the idea that nature has attempted a double row of teeth, almost useless for the purpose of mastication, rendering clearness of speech impossible and spoiling what otherwise might be a handsome face, transformed by the foresight and skill of the dentist into a symmetrical and graceful line of well articulated teeth, serviceable in every respect, and beautiful withal, is by far the best advertisement of the dentist's eminent qualifications among the acquaintance of his patients that he can possibly wish for. I do not hesitate, therefore, to bring this subject before you, not that I can, in any way, add new theory or method of treatment to the large number already brought forward, after years of careful investigation and research, by men of long experience and large practice; but in the hope that in the discussion which may follow, we may all receive many hints one from another as to details heretofore overlooked. And I would here remark that he, who from the large number of existing mechanical appliances, judiciously selects, and skilfully adapts the one best suited to the case under treatment, ranks almost as high as he, who from a fertile brain devises an entirely new method.

Time would fail me in this short paper, to even enumerate the many causes assigned to, and the different treatment proposed for, the various forms of irregularity constantly coming before our notice. My aim is, to be practical rather than theoretical; suggestive rather than exhaustive.

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*A paper read before the Students' Society of the London Dental Hospital.

Irregularity, of the teeth in regard to their position one to another, and to the jaws themselves, and not in respect of their size, form, or number will be the subjects of this paper. That the mal-position of the teeth, however, is in many cases due to their size and number, is patent to all, especially in view of the fact that the teeth are developed quite independantly of the jaw. Kingsley says, "The laws of inheritance show how constant is the mingling in the offspring of the traits of character and the peculiar features of two diverse races, brought together in marriage. This mixing, without blending or harmonising, is productive of deformity in character and in physique, thus so far as the jaws and teeth are concerned they may exist in each parent in perfect symmetry; in one parent the jaws and teeth are large, in the other parent both jaws and teeth are small. If now, the small jaw of one parent and the large teeth of the other appear in the child deformity is sure to follow." And these facts will much influence our treatment of such a case."

We may define irregularity as a departure from the normal type of jaw, by which we mean, that full capacity which admits of the perfect arrangement of the teeth, whether found in the square-shaped arch, or in the oval. Every other form, wherever there is evidently an insufficient space for the proper accommodation of all the teeth, we class as an irregularity, and as such it claims our attention, for besides being a source of disfigurement, and inconvenience, it is one of the chief predisposing causes of caries, and never fails even in the most healthy constitutions to destroy, sooner or later, the strongest and best set of teeth unless properly attended to.

The varied causes of irregularity, in respect of which there are so many conflicting opinions, I will not touch upon, as that subject received skilful handling in a paper read before this Society a few years back. I may, in passing, remark that a correct knowledge of the etiology of each case, whether due to the influence of heredity, or to some habit or mechanical interference in operation during life, will often prove the key to the best subsequent treatment.

Much of the success in this branch of our profession depends on the power of observation, and on the care and attention bestowed on the investigation of the peculiar features of each case. The tendency, I fear, of the average student is rather to rely on the skill and judgment of others, than to try by the exercise of his own resources to work out the problem for himself.

Before giving an opinion as to the treatment of any case, the patient, and the models of both jaws should be well studied. The age and sex of the patient will largely influence the treatment. What might in the case of a strong and healthy boy be good practice to adopt, would often, if carried out in the case of a delicate young girl be an absolute crime. Many good looking people, and often very pretty women have contracted jaws, and many children are commonly seen with crowded teeth, all possessing mouths and features delicately formed and expressive ; the beauty of which would be greatly marred by any expansion of the arch which would tend to give an unnatural dental prominence. Where too, in a young person, owing to the functions of absorption and reproduction being more active than in later life, we should advise the expansion of the alveolar arch, we might with equal consistency in a person 10 years older, recommend the extraction of two or more teeth to relieve their crowded condition.

A careful examination of the teeth with a mouth mirror and probe will often by itself settle the best course to pursue. The removal of a carious tooth will often provide the space required for the remaining teeth to be brought into line. And even where caries is not developed, but where we can trace signs of extreme liability to the disease in the peculiar form, colour, or appearance of any of the teeth it, would be a wasted effort to attempt to preserve the whole number when the extraction of one or more, would not only reduce the irregularity, but would perceptibly delay the ravages of caries among the rest.

A too early interference with the case, is contra-indicated by the fact that nature is constantly endeavouring to bring the teeth into the position best adapted for their use, provided that the cause of such irregularity be removed. We constantly see young children with teeth misplaced on their eruption, which in the course of two or three years will have assumed a very good position. The socket of a developing tooth being large, and the position of the alveolus being determined by the tooth and not *vice versa*, it is evident that a very slight pressure will drive the tooth into any desired position where it will become firmly fixed. Between the constant and even pressure of the muscles of the cheek and lips without the arch, and of the tongue within, the teeth are naturally directed downwards and into a symmetrical curve. A recent writer says "when examining a series of jaws at different ages arranged so as to show deciduous and permanent teeth, it is not a matter of surprise that there should be irregularity in the permament set, but when observing their crowded and irregular arrangement in the jaw prior to eruption, it is rather a matter for astonishment that they should ever assume a regular and symmetrical appearance." As a general rule it can be laid down that cases of irregularity should not be treated mechanically until all the permanent teeth are erupted.

Although a definite judgment cannot be given by seeing the models of a mouth alone, the study of the plaster models should never be neglected. From them it can be best judged as to the amount of space likely to be gained by the extraction of certain teeth. The articulation of the teeth can be better studied than in the mouth, and if seen to be good, it will be much preferable to extract the misplaced tooth or the adjoining one rather than disturb, and, perhaps, permanently injure the utility of the masticating organs. In cases of crowded maxillæ, in which it is doubtful whether by moderate expansion there will be room for the whole series to be brought into line, Dr. Kingsley has suggested that the teeth should be cut off the plaster model and re-arranged in a normal position. If the arch would be made abnormally large by the retention of the whole number, one or more of the teeth can be dispensed with, and the remainder again set on the model. We may, thus, easily judge as to possibility of preserving the whole number without unduly expanding the arch to the disfigurement of the face, and what would be the probable result of extraction, if performed.

For the purposes of describing their treatment I shall divide the cases of irregularity into two great classes. (1.) Those in which the extraction of one or more teeth is indicated; and, (2)—Those in which by mechanical pressure the disordered teeth may be brought into line. The mistaken idea that the full number of the teeth must be retained regardless of every other consideration is still held by some to be the only good practice, whereas the experience of most of the leading men is, that it is far preferable to deal with small jaws and crowded teeth by the timely removal of certain teeth, especially in young people, whose constitution is not such as can stand the effect produced by the continual wearing of a regulating plate in the mouth. Mr. Coleman lays down the principle that when the maxillæ are deficient in development in regard to the teeth, some of the latter should be removed, whereby the harmonious relationship of the teeth to the maxilla may be restored.

The selection of the best tooth for extraction is one which needs a great deal of thought. The front six teeth should but seldom be removed. The laterals, when within the arch and on occlusion coming inside the lower teeth, may be well spared when the articulation and quality of the rest are good. The treatment of canines when erupted high up in the alveolus will greatly depend on the direction of their roots. When, however, their crowns are directed towards the cheek and their root cannot be felt, they should be extracted; for in those cases it will be often found that they have small roots, and bent so as to amount almost to dilaceration.

In the cases of extractions given by Sir John Tomes in his Lectures on Dental Physiology, 21 per cent. of the laterals and canines he extracted, were removed on account of the crowded condition of the teeth, while no molars, and but few bicuspids, come under the same head. It will be seen that this mode of treatment has been almost superseded, doubtless due to the mechanical appliances since invented, by which the front teeth may be drawn back when room has been provided by the extraction of a molar or bicuspid.

As to which of these two last, should be sacrificed a long discussion begun many years ago is not yet concluded. I am inclined to favour the extraction of one of the bicuspids as being of much less use in mastication, their surface being about one half of that of a molar, as interfering much less with the articulation of the teeth, and as requiring a far shorter time for the canines to be brought into place. The great argument adduced in favour of the first molar is that it is more liable to caries, but where we find a sound molar in a child of, say, 12 years old, there is no reason why with careful attention it should not last for many years. Moreover, the removal of an upper molar usually requires that of its opponent in the lower, and of those on the other side of the mouth, so as to allow of the space gained being utilized, and to preserve the symmetry of the mouth and a good occlusion. I have recently extracted three upper carious bicuspids from crowded mouths, the roots of which were short, and twisted, and which would have offered great opposition to any successful movement posteriorly had the 6 year old molar been removed, and an attempt been made. In many cases of irregularity such as those of outstanding canines, the removal of the first bicuspid will do away with the necessity for any further treatment. The best time for extraction is when all the permanent teeth are erupted. If done previously to this, the developing 12 year old molar, finding that there is much less opposition to its forward movement than is usual, will travel rapidly forward, closing up the space gained by the extraction. We have marked cases in which through a desire to provide room for the crowded front teeth, the bicuspids have been removed at the age of 10, the result being that a year or two after the eruption of the 2nd molar, the space has been entirely closed without any advantage as regards the condition in the front of the mouth, and as a consequence there is not that full development of the posterior part of the maxillæ, for the advance of the molars seems to greatly check the further extension of the length of the jaw which would have been required to accommodate the teeth in their normal position on eruption. The extraction of back teeth alone, without the aid of a regulating plate, will seldom remedy a crowded condition of the front teeth, as apart from the influence of the opposing teeth ; there does not seem to be any tendency in the teeth to travel backward, except so far as to accommodate themselves, and allow more easily of their normal movement from side to side in mastication.

In concluding these few remarks on extraction, let me say that though I am in favour of a freer use of the forceps as a corrective in many cases of irregularity than is usually made, I cannot but view with distrust their use in semi-extraction" as the torsion of twisted incisors has been styled. There is always an element of uncertainty as to the position of the root of a twisted tooth, for the same cause which usually acting before the eruption of the tooth has produced its abnormal position, may also have affected the relationship of the root to the crown in the form of dilaceration. Even though successfully rotated, the operation is attended with danger to the vessels both of the tooth and periosteum, the result sometimes being the death of the pulp and early loss of the tooth ; and although the connection of the tooth with the alveolus may be partially re-established, it will ever be subject to inflammation from comparatively small causes.

Before considering the various appliances by which pressure can be produced on the teeth, in the direction necessary for the correction of the irregularity, a few words as to the physiology of the movement of the teeth in the jaws will not be out of place, so that we may the better judge as to the kind of pressure, whether continuous as by means of elastics or intermittent as by screws, best suited for the purpose. We cannot have failed to notice in comparing the models of the same mouth taken at different ages for the purpose of supplying artificial teeth, that the teeth which have been clasped by bands are often removed a long distance from their original position, and are yet quite firm in their sockets. It is, therefore, a patent fact that bone under certain conditions will give way or become absorbed, and that the space vacated by the tooth will in a short time be filled up by the reproduction of bone. But the movement due to the absorption in the socket of a tooth will not fully account for its movement when pressure is applied. For example, a permanent incisor erupted in an inverted position, can, in a favourable case, be brought forward in about a week. It cannot be argued that the alveolus in front of the tooth can have been absorbed in so short a time to such an extent as to allow of such a rapid movement. Sir John Tomes accounts for this, by the explanation that the pressure on the tooth has induced a thickening of the periosteum, which has consequently raised the tooth in its socket, and thus has allowed it more freedom of movement. The theory advanced by Dr. Kingsley appears to me to be nearer the truth. He remarks in these cases the general absence of pain and tenderness, which are usually the attendants of a thickened periosteum. In his opinion the rapid movement is due to the yielding of the outer alveolus, which is very vascular and elastic; these qualities allowing the pressure of the teeth to bend it outwards without producing any sequestrum. So that he believes it possible to move a tooth a short distance without any absorption of the alveolus being induced, and by the reproduction of bone in the enlarged socket to render the tooth perfectly firm in its new position.

The various mechanical contrivances for remedying the irregularities of the teeth, consist mainly of plates of gold or vulcanite, accurately fitted to the jaw on which the various forces act. In the majority of cases our work consists in expanding the arch, pushing out any instanding teeth, or in drawing in outstanding teeth. For the expansion of the arch very many methods have been suggested. The old plan described by Sir John Tomes was to fit double clasps round the two bicuspids or round the 2nd bicuspid and the 1st molar on both sides of the mouth and solder both to a cross-bar of silver or elastic gold wire bent so as to fit the arch of the jaw as nearly as possible. The clasps were fitted tightly round the teeth, and the cross-bar straightened from time to time. This proved a very useful appliance for widening the arch in the bicuspid region. The method usually adopted here is so well known to you all that I need not describe it. The Coffin plate, consisting of a split vulcanite frame which caps over the back teeth and acts by means of a W-spring made of piano-wire, is most effective in the hands of many operators. The many applications of the Jack-screw render it a most useful and powerful agent in these cases. It has some advantages over the last named method, in that its action can be confined to one side of the jaw, and even to one particular tooth if required. Though it can be used by itself it is much preferable and safer to make a plate to carry it, reaching across the mouth, and built well up against the offending teeth. The plate is made very thin in the centre of the palate so as to allow of its being straightened under pressure, and the square end of the screw is inserted into a small mortise cut in the plate, on the one side of the palate and the point into a small pit on the other. The screw can be taken out and replaced at will, according to the direction in which pressure is wanted, requires. In power and adaptability they excel the former method, and are much more rapid in their action. In favourable cases the distance between the right and left bicuspids can be increased by a quarter of an inch in a fortnight. By a very ingenious arrangement they can also be adapted for use in the lower jaw.

Elastics may be used in a very large number of cases and on account of their wide application they form one of the most convenient and certain methods of regulating the teeth. They should in all cases be attached to a plate which should be carried right up to the misplaced teeth so that the elastic bands may not slip down the necks of the teeth and produce an alarming result. Especially will they be found useful in reducing the prominence of the front teeth, and in rotating twisted incisors.

Among the many other forces of which there is no time to enter into details may, be mentioned wedges of compressed wood, spring wire made of gold or steel, for use as levers, inclined planes, and silk ligatures, all of which we should try and become familiar with as students here, so that in our future private practice, we may have some practical knowledge and experience of all the well-known mechanical apparatus, and be able to select and adapt the one most reliable in our hands.

The question is often asked: How many teeth should be moved at once? The answer will much depend on the kind of force to be applied. In such a case as the pressing out of incisors by means of wedges of compressed wood inserted into a vulcanite plate it will be found that if more than two teeth are acted upon at once that instead of pushing forward the incisors, there will be a tendency to drive the plate back in the mouth, carrying along with it the back teeth to which it is attached. In treating some cases I have been deceived in this way, and not until I took out the wedges or pegs and inserted the plate alone, and on inspection saw that the plate fitted the back of the teeth as at first, did I find out my mistake. But when forces acting in different direction are needed, more than two can be applied, for one will tend to counterbalance the other. Dr. Kingsley describes a most interesting case in which by means of eight elastic bands, acting at one time, he brought back the bicuspids on each side into the space gained by the extraction of carious 6 year molars, reduced the prominence of the canines, brought forward the laterals and twisted the centrals, completely curing the irregularity in the short space of eight weeks.

The capping of teeth by a vulcanite pad has for some time appeared to me in many cases unnecessary and even harmful, especially in view of the length of time many plates have to be worn. It has a great tendency to disorganize the articulation by allowing the front teeth to elongate, so that when the plate is removed the teeth in the molar region do not meet on closing the mouth, and the whole of the bite being thrown upon the front teeth, another deformity may ensue. Some four years ago I made a plate for myself in order to push out an instanding lateral and expand the arch. After wearing the plate for some time with not much result, I gave up wearing it and have never since been able to articulate my teeth with any degree of comfort, owing to the alteration of the bite through the capping of the bicuspids and molars. Many dentists, especially in America, manage to correct all sorts of irregularities without ever having to raise the bite. The articulation of the teeth interferes but little with the movement of the misplaced teeth, as becoming somewhat tender when loosened in their sockets they instinctively keep away from the opposing teeth. Retention plates should be made on the completion of every case to maintain the ground gained, unless such will be done by the opposing teeth. The length of time during which they should be worn will much depend on the rapidity with which the movement of the teeth has been effected, on the number moved, the alteration of the bite, the age of the patient, and on the hereditary nature of the irregularity. Among the latter class there seems to be a deep-seated predilection to an immediate return to the family type, especially in the case of prominent incisors, so that the retention plate may have to be worn for two years and even after that.

The bad effects of a regulation plate on the teeth may be much lessened by paying particular attention to the fit of the plate round the necks of the teeth in order that there shall be no room for any growth of the gum which would be the source of a mucous secretion most injurious to the teeth. The gums should be frequently painted with tincture of iodine to keep them healthy, and the patient instructed to keep the plate scrupulously clean by washing it night and morning with soap and water, and dipping it afterwards in sal-volatile. For this reason plates should not be fixed in the mouth so that patients cannot remove them unless they can pay daily visits to the dentist.

In apologizing for the rambling manner in which I have treated this important subject, allow me to say that I thought it better to occupy the time in bringing forward general rules for your guidance, rather than weary you by descending into particulars of a few well-known examples and types of irregularities.

To you, who believe in the theory that by early and careful correction of the irregularities of the teeth in children, it is possible to stamp out the tendency to such deformity in their offspring, and so in time to arrive at that Utopian age in which every member of the coming race will possess a mouth with teeth perfect in number and position, the idea should prove a great incentive to diligent work among disordered mouths, and to you, who with myself, are sceptical on this point may the thought that by your skill and attention you are conferring a life-long benefit upon your patients, ever prove an encouragement to you in your ofttimes thankless task of the Treatment of Irregularities of the Teeth.

A STUDY OF THE PRACTICE OF FILING AND OF EXTRACTING TEETH, FOR REAL OR ALLEGED BENEFITS.*

By J. MORGAN HOWE, M.D.S., M.D., New York, N.Y.

(Read before the New York Odontological Society, June 12, 1888.)

I DESIRE as deliberately and positively as possible to endorse what Dr. Davenport has said in opposition to the practice of cutting or filing the teeth for separations. Some years ago, for a short time after the publication of Dr. Arthur's book, I indulged in that practice, but the ultimate results were very unsatisfactory. I say *indulged*, because at the time I found it a great convenience in operating; it made the work easier, and it was only abandoned later from the positive conviction of its pernicious effects. Subsequent decay was not prevented, mastication was meantime hampered, temporary separations were followed by worse contact, and all later operations for approximal decay were rendered more difficult, unless cutting or filing was again resorted to.

I have since repeatedly examined the mouths of persons whose teeth have been cut or filed apart by some of the best exponents of that practice, desiring to revise my judgment on the subject, but the conviction which caused me to desist has always and constantly been confirmed by the appearances of the same evils, with no compensating advantages.

Keeping before my mind the "preservation of the teeth in the greatest efficiency and for the longest time," I have never seen anything in the way of cutting or filing separations that I could regard as successful, and the discomfort of such operations was made painfully apparent to me personally some years ago. I might show models to prove the bad results of this practice, but they would only repeat what Dr. Davenport has shown with sufficient clearness to support the charge. It devolves now upon the advocates of this practice to prove that these are not fair samples of their work. They practically affirm that they can cut and file with beneficial results; the onus is placed upon them to establish their claim by the model and record. At present the reasons set forth for preserving the normal shapes of teeth seem to be sufficiently convincing to satisfy all who are open to conviction. There must, therefore, be very few instances in which any other method of filling approximal cavities than making full contour fillings can reasonably be regarded as the best; and with present facilities for doing such work successfully there remains no good reason for objection to it.

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* This paper is partly a review of a paper by Dr. L. B. Davenport, of Paris, France, published in the *Dental Cosmos* for July 1887, in which Journal Dr. Morgan Howe's paper has appeared in extenso.

In regard to the propriety of extracting teeth to effect a more favourable arrangement of those that remain, I will submit some cases and call your attention to facts in connection therewith, which lead me to a different conclusion than that which has been so ably presented by Dr. Davenport. I have studied his paper with the care that it deserves, and have only commendation to offer for his admirable showing of the facts which he presents, but question whether the bearing of these facts upon practice is in full accord with his deductions. His point of departure, you have observed, is the perfect denture—perfect in arrangement—and his opening sentence is to the effect that "nature has furnished man" with such an apparatus.

This statement suggests, I think, the key to the whole variance of Dr. Davenport's view from that which I wish to present. I dispute the statement, and claim that, as a fact, ideal dentures such as Dr. Davenport so admirably describes are seldom seen. They exist in relatively small numbers. His deductions are made from these perfect, ideal arches, while the results of extractions as shown in his illustrations come presumably from irregular dentures; at least we do not know the original condition, nor the purpose in view in removing teeth from them. I think we are safe in assuming that none fo them were originally ideal dentures. Some of them show that they were not, and it is misleading to hold up the ideal as the type by which to judge results, when the originals were irregular or distorted, and incapable of being brought to perfection. The experience of practice is, that all sorts and conditions of variation from the ideal are constantly presented; and intelligent judgment must be used to choose between evils.

Argument from the standpoint of the idealist is alluring, but fallacious. To illustrate, I will refer to the fact that a few years ago many of us were impressed with the idea that an effort should be made to save the pulp of every tooth; that every pulp—even part of a pulp—could be saved. The normal tooth has a living pulp, and to have a tooth without a pulp is less than perfection; it is less than we may well wish for. Yet experience has forced the conviction upon most of us that many pulps cannot be saved, and that practically the highest attainable good is better than an ideal unattainable; for efforts after the unattainable entail loss and suffering.

With a full appreciation of the possibilities and limitations inherent in each case, the part of wisdom is to attempt only so much as experience and enlighten judgment lead us to conclude can be effected. I realize that in making this statement I am in danger of being misunderstood, and hasten therefore to say that I would not in the least degree undervalue the nearest approach to perfection that can possibly be attained.

I am not influenced to regard the loss of teeth as of little moment, because of such facts as that related of an old gentleman who was well and happy in the possession of no teeth but the lower incisors. I have seen a number of cases where the ability to masticate had been lost almost as completely as in this one, in which no admission could be obtained that they lacked such power. These things only prove our wonderful ability to become adapted to circumstances. The stomach may do vicarious duty, and the health continue good, but the loss of masticating power is a *fact*, and an important one, even if it does "take a dentist to discover it," as one gentleman remarked in our last discussion of this subject.

But it does not follow of necessity that an invariable rule of practice should be adopted, condemning the extraction of teeth, if good reasons can be shown for such procedure, and some indications for it be determined. The present state of development at which dentistry has arrived is largely due to the need which exists for our ministrations, resulting from the practical fact of to-day, that *nature has not furnished man with an ideal dental apparatus*, neither in arrangement nor structure. Variations from the prototype, in small or great degree, are the rule of daily observation, and perfect dental arrangement and perfect harmony of relation to the face are so much the exception as to be a matter of note. The results of removing teeth from imperfect or distorted arches must for this and other reasons be of much more interest and importance to us, in their relation to practise than results from similar losses occurring in ideal arches. In imperfect arches we have evils which frequently demand correction or modification ; in ideal arches no evils of the same nature exist ; in the former a change of condition is desirable, while in the latter no change can occur that will not deteriorate.

In describing the results that he has observed, or has concluded must follow, from the mutilation of perfect dentures by the removal of teeth, Dr. Davenport says, "If any *one* tooth be extracted from the above described ideal dental arches," no important change will occur unless the tooth lost is one of the lower incisors ; and then describes very accurately the changes resulting from the latter loss,* and further on says, "Now let us suppose a more common case, viz., that of the extraction of all the first molars from the same ideal mouth," and then describes and illustrates the results that follow.† This is admirable, and should be, I think, a sufficiently well based argument to prevent any dentist worthy the name from extracting any teeth from perfect arches with a view to improvement. I am sorry to know that first molars are removed from such mouths, and I hope that Dr. Davenport's argument against such practice will prevent all reading dentists from continuing to cherish delusions regarding its results. It seems merely a truism to say that an ideal arrangement of the teeth affords the greatest utility, and the best opportunity for cleanliness,—it is perfection, both in beauty and utility, and no change whatever can be made without proportionate detraction,—and that the most sanguine expectation of preventing decay by the extraction of teeth would not justify the great evil that must be effected in such a mouth by such sacrifice. I hope and believe, however, that the number of those who would do so is very limited. The practice of extracting teeth for the benefit of those that remain has had a reason behind it, when applied to arches that were over-crowded with teeth, and has been resorted to by those of careful judgment as a choice between evils; but the removal of teeth that can be saved, from perfect or approximately perfect arches, or those that can be permaneatly made so, can very rarely, if ever, be rightly considered the lesser evil. The question that interests us, and on which our differences will mostly turn, is concerning dentures that deviate from perfection, so that teeth are crowded and irregular because they are relatively too large for the arches in which they are placed, and the arches themselves are large enough, or perhaps too large, for harmonious relation with the maxillæ and other facial bones. In connection with these conditions we frequently have such deviation of the relative shape and relation of the upper and lower maxillæ as to produce various aberrations of occlusion.

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* DENTAL COSMOS, July, 1887, pp. 421, 422, 423.

† Ibid., pp. 423, 424.

In order that all the teeth may articulate perfectly, there must be congruity between the superior and inferior maxillæ, and, in calling, attention to departure from this condition, I shall not go far astray if, for brevity of description, the variations are attributed entirely to the lower jaw, supposing the upper to remain the same. One deviation from normal adaptation of the lower to the upper jaw may be indicated by a short body and a long rami, including between the former and the latter a small angle, thus tending to a depression of the molars and bicuspids, and elevation of the lower incisors and cuspids, so that the point of contact, if it exists, of the latter with the superior teeth is nearer the gum than normal: and the points of the inferior incisors may in some such cases quite touch the gum behind the superior teeth, accompanied perhaps by protrusion of the anterior upper teeth. The other direction of variation may be presented by a long body and short rami, with a large angle included between them, tending in proportion to the pronounced character of these peculiarities, to elevate the lower molars and bicuspids and depress, as well as project forward, the inferior incisors, so that the latter may articulate nearly or quite on the edge of the corresponding superior teeth, or may close over and outside of the latter, as in familiar cases of protrusion; or the points of upper and lower incisors may be separated by a wide space, when the posterior teeth are closed. In all these departures from perfection we recognize want of adaptation of teeth to jaws, or jaws to each other, or both. Arguments based upon the assumption that perfection is the order of nature clearly do not apply to these irregularities, and yet variation from the ideal is more frequently seen than perfection.

I present two models to illustrate these conditions,—in one the bite is too short,—the lower incisors almost striking the gum,—answering more or less accurately to the first-described condition of maxillæ, and the other the bite is too long, answers to the latter description. These are purposely chosen as not showing extraordinary conditions, but suggesting many varieties of maladaptation of the two jaws.

Then there are the great number of incongruities so familiar to us, in the relation of the teeth to the arches in which they develop. I recall the inspection of mouths in which the maxillary arches were so broad and full, with the teeth relatively so small, that there was contact between very few in the same jaw, and between some there were wide spaces.

The cast of an arch of this kind, serves to illustrate such a deviation from the normal ideal type.

I have never seen such an arch as this that was too large for harmony with the face, although such conditions may exist; the lack of fitness seems to be referable entirely to deficiency in the size of the teeth. The loss of a tooth in such a mouth would evidently be disastrous, and I devoted much time and effort toward the preservation of the broken-down molar whereas the difficulty and uncertainty of its permanent salvation might well have had serious weight in considering what might be best for its owner if it had presented in a mouth overcrowded with teeth.

Another cast represents, on the other hand, the teeth of a boy thirteen years old, showing a somewhat crowded condition of the anterior teeth. The arches are of good size, but not quite large enough for a regular arrangement of the teeth, and the irregularity that exists is evidently an inheritance from his mother, whose teeth present a very similar crowded appearance. Enlargement of these arches and a regular arrangement of the teeth could undoubtedly be effected, but my opinion was that this would result in an undue fullness of the mouth and prominence of the teeth, and that, moreover, the inherited tendency to irregularity in the anterior teeth would continually tend to re-assert itself, and would probably prove eventually the conquering, because most persistent, force, unless the conditions were more positively changed than they could be with all the teeth in situ. My observations indicate that inherited tendencies of this character re-assert themselves even after retaining fixtures have been worn a long time, and that in all cases *crowded teeth*, although made regular, are finally made irregular again; whereas, if the changes made are sufficiently radical, they may be expected to be permanent. For these reasons, in this case (although it is not an extreme one) I advised the extraction of the four second bicuspids. I have the more pleasure in showing this case because it illustrates certain differences of opinion. My friend Dr. Bogue informs me that he was consulted in the same case, and, without knowing at the time that I had seen it, advised against extraction of any teeth. I shall be much interested, if I am permitted, to see the results of regulating in this case without extraction after ten years or so have elapsed.

But it is especially desired to direct attention to actual results of the removal of teeth from the arches, not to theoretical propositions about results, nor to individual opinions. The greatest service Dr. Davenport has rendered is in establishing the precedent of presenting facts as a basis from which to form conclusions, and I believe that all progress is only to be maintained on this line. Details must be studied in models, as well as in mouths, in order that causes and conditions may be understood which induce the changes following the loss of teeth. The facts he presented all showed evil results from extractions ; but we are not told and need hardly suppose, as before remarked, that the original condition of these cases was that of the ideal ; they do not, therefore, quite illustrate that phase of the subject, and can be accepted merely as examples of bad results, and a valid and forcible argument *against indiscriminate extraction*, and *in favour of further study* of the subject.

This lesson cannot be too strongly emphasized, nor the impressive presentation of it too much commended ; but in whatever degree it is assumed to be final, and to warrant the enunciation of principles, we must dissent.

One side only has been presented by Dr. Davenport,—all his facts set forth apparently with the purpose of supporting the view he advocates ; but there are other facts to be considered and their bearing weighed before we can yield our attention to the summing up. It is to be hoped that much more new evidence will be produced before the verdict shall be rendered.

(*To be concluded.*)

British Journal of Dental Science.

LONDON, NOVEMBER 1st, 1888.

PATHOGENIC BACTERIA IN HUMAN SALIVA.

Every day dentists are being called to extend the boundaries of their range of knowledge. The surgical affections of the mouth, tongue, lips and gums very frequently are referred in the first instance to the dentist, and if he recognises the significance of the symptoms and appearances and their importance is appreciated the sufferer is hailed in good time to the surgeon. So is it with the "medicine" of the alimentary tract, or more probably speaking, of the pharyngeal tract. The dentist of to-day has to be a little bit of a physician just as he is compelled to pose as a surgeon, and give opinion about surgical and medical ailments which attack his province—the mouth. Without going so far as to say with some writers that "the mouth is the opening into the stomach," we certainly feel that the dentist should possess enough knowledge of the physiology and pathology of alimentation to recognise the aberrations in that function which arise from imperfect mouth digestion. The innervation of the muscular and glandular structures of the mouth, the pervertion in quality and quantity of the saliva, and the imperfect mastication and trituration of food materials introduced into the buccal cavity, are matters with which dentists should be familiar. But there is yet another and most important branch of "dental medicine," which has latterly thrust itself into most prominent notice, the study, of the bacteria and micro-organisms infesting the nooks and crannies of the mouth. Since bacteriology became promoted into a science, the immense importance of its teaching as regards health, hygiene, and disease, has been fully recognised; but for a long time, even before the general mass of the profession wére alive to this, many earnest workers had shown the powers for harm-doing micro-organisms possessed when they were domiciled in the mouth. As has been well pointed out that cavity in many particulars offers an admirable substitute for a "cultivation chamber." The heat, moisture, and constant presence of albuminous and sugary dèbris presents all that certain forms of micro-organisms need to grow and multiply indefinitely. It is a common impression that the mouth of healthy persons, or rather of those who are believed to be free from recognised disease, cannot harbour pathogenic bacteria, although recent researches have abundantly proved the existence of micro-organisms in different forms of dental disease. However, Netter, a careful and reliable observer has revealed a somewhat startling state of things. He examined the saliva of numerous ostensibly healthy persons, and found that a bacillus existed in every case which closely resembled, if it were not identical with, the *Streptococcus pyogenes* described by Rosenbach, a micro-organism associated with, if not the cause of suppurative inflammation. For dentists this fact possesses the greatest interest, for while these bacilli are present in a mouth, the most extensive suppurative processes are upon the verge of being initiated. While upon the one hand, fair vitality, or as doctors prefer to call it, "resistive power to disease," is present, and the buccal epithelium is intact, the streptococcus pyogenes is unable to do damage; yet on the other hand, we have but to find a patient worn out by town dwelling, prolonged pain, or tendency to infective forms of disease, and we may be pretty sure that should an abrasion occur in the mucous membrane of the mouth and the streptococcus pyogenes will effect an entrance while suppuration will certainly ensue. When it is remembered that very many dental operations must not only lay open the lymph channels of the soft tissues which, of course, are the absorbing media, but open up bone cavities, Netter's results assume even greater importance than might at first appear. There can be little doubt that many of the reported cases of pyæmia following extraction of teeth are cases in point, while it seems likely that the explanation why so few casualties of this sort occur, lies in the well-known free blood supply of the buccal cavity and its contained structures, together with the "free drainage and irrigation" which usually obtain in superficial wounds of the gums and jaws. Swelled faces, colds "caught" in the socket after extraction, may in many cases also come under this category, and may well provoke closer study and more efficient prophylactic treatment. Netter's discovery points certain lessons. In the first place, free use of antiseptic mouth washes, boric acid solution, boroglyceride, carbolic acid, permanganate of potash, listerine, chloride of zinc in dilute solution, with mercuric salts, should be had resort to, both before and after extraction; while a most careful cleansing of all instruments should be insisted upon in order to avoid the ever present danger of transferring from one mouth and inoculating into another the streptococcus pyogenes, and other pathogenic bacteria. Forewarned is forearmed, and so we will hope that in this case the old saw will be found to be accurate.

DINNER OF THE PAST AND PRESENT STUDENTS OF THE NATIONAL DENTAL HOSPITAL.—One of the most successful of festive gatherings took place at the Holborn Restaurant, October 19th, the report of which will be found in another column. We may say here that the loyalty and affection felt by the students for the school and their teachers were shown in a very marked degree. We saw "old students" whose home was hundreds of miles away, who had undergone the toil of a long railway journey to pay "honour when honour was due." The evening was a pronounced success, and thanks to the energy of the executive, the arrangements were admirable. Mr. Henri Weiss, the incoming Dean announced his own debut in modest and well chosen terms. All were sorry to say good-bye to Mr. Gaddes, and all were glad to welcome his successor.

DEMONSTRATIONS AT THE LONDON SCHOOL OF DENTAL SURGERY.—The Surgical Staff have commenced the session at Leicester Square with somewhat an innovation, but one which promises to become most popular and highly useful. The different officers undertake each week to hold Clinical demonstrations upon patients, showing to the men the most approved methods with which modern scientific dentistry combats the inroads of disease. The clinics are crowded and should therefore be held in every case in the theatre.

DENTAL VACANCIES.—It is seldom so many vacancies occur at once. Mr. Hutchinson's well deserved promotion to the important and honourable post of examiner, at the Royal College of Surgeons of England, was preceded by his resignation of the Chair of Dental Surgery, at Leicester Square, a vacancy which we believe will probably be filled by Mr. Storer Bennett, M.R.C.S.,L.D.S., who may, it is rumoured resign his surgeoncy, thus recreating a fresh vacancy. Dr. Joseph Walker has also resigned the Chair of Dental Mechanics in the same school, and Mr. J. Smith Turner undertakes the Lectures until a successor to Dr. Walker can be found. Should any of the senior staff accept the lecturership, there is likely to be created yet another gap in the list of surgeons, so promotion is the order of the day just now. Mr. Pedley's school at Guy's will require a dozen or so more dental surgeons, so there ought to be a good time coming for the juniors! Excelsior!

CHARING CROSS HOSPITAL.—The Scholarship of Fifty Guineas open to students of the Universities of Oxford and Cambridge has been awarded to Mr. Albert Curling of St. John's College, Cambridge. The Entrance Scholarship of One Hundred Guineas has been awarded to Mr. William Escombe, and that of Fifty Guineas to Mr. Percy J. Probyn.

A CORRESPONDENT WRITES :—Your paragraph "Christian Science" as an obtundent, reminds me of a patient who consulted me regarding a badly diseased upper molar. I recommended extraction, and whilst doing the operation was surprised to see no symptoms of pain show themselves in the patient, who, by the way, was a delicate looking lady connected with a mission-house. When the tooth was out, I complimented her on her self-control to which she replied that she actually felt no pain whatever, as she had been absorbed in prayer the whole time.

ETHER-ANÆSTHESIA BY LOCAL APPLICATION.—In the *Therap. Monatss.* Hénoque and Frédet recommend the application of ether to the face, immediately in front of and about the lobes of the ear. It is claimed that the trifacial nerve may thus be sufficiently anæsthetized to produce local insensibility which will permit the painless extraction of a tooth. We should recommend that the application be made with ether-spray atomiser, but we do not think the application likely to be of much use.

STEATITE AS AN DENTIFRICE.—Many years back M. Vigier discovered that the addition of powdered talc to water prevented the deposit of calcareous salts in boilers. Applying this fact to dental therapeutics, he has devised a new dentifrice, which, he says, prevents the formation of tartar. The formula is as follows : Powdered steatite, 90 grammes ; desiccated alum or cream of tartar, 5 grammes; powdered cochineal, 10 grammes ; essence of peppermint, 20 drops. Any other perfume may of course be substituted.

THE FIRST "WOMAN DENTIST" IN AMERICA.—Miss Annie Rombergel, of Philadelphia, is believed to be the first woman dentist in America. She entered the Pennsylvania College of Dental Surgery more than fifteen years ago, and completed the course in spite of professional opposition.

Abstracts of British & Foreign Journals.

THE SOUTHERN DENTAL JOURNAL.

VACUUM CAVITIES—A NEW IDEA.

In a certain percentage of mouths an accurately fitting plate will have sufficient adhesion, by simple contact. In the majority of mouths, owing to shape and still more to varying texture of the mucous membrane, the case is otherwise. We all know the arguments advanced by competent men, on either side of the question. The vacuum cavity is of the utmost assistance and comfort to a beginner, to the unfortunate who wears a plate for the first time. During the first few weeks its value is great enough to outweigh its disadvantages and defects. There is a great objection to this plan, the conges-ion, (sometimes hypertrophy), produced by the cavity. Experimenting with Dr. Spyer's cohesion forms, the writer was disappointed. First, because he never succeeded in fitting a "form" upon the model without cutting and mutilating it, Secondly, because the "form," it left on the vulcanite plate turns black and becomes unsightly. If it is stripped off, the plate is too large by the thickness of the form. Borrowing an item from the said Cohesion Forms, he adopted the following plan, first examine the mucous membrane with the finger and mouth mirror, noting the various hard and soft surfaces, scraping the impression where the hard points come, and the model where the soft parts are situated, leaving, however, a narrow band untouched where the heel of the plate will come. He then takes some of the smallest sized, round-headed gimp nails, (a larger size will not answer) and as soon as the model is separated from the impression, and before the plaster becomes thoroughly hard, he presses a number of these little nails into the model, covering as much of the palatal surface as seems disirable. A few marks with a lead pencil enables to place them regularly. They are tapped down closely, and the case is carried forward in the usual manner. Before putting the rubber into the flask, a coat or two of liquid silex diluted should be carried over the model with its little projecting nail heads. There is no further work or trouble about it, and no more time is taken up, than is required by the adjustment of a vacuum form. A good, strong adhesion is the result, and no unpleasant results follow.

TREATMENT OF DEVITALIZED TEETH.

By H. H. Johnson, D.D.S., Hawkinsville, Ga.

He confines himself to the posterior teeth. Suppose a devitalized tooth, a week having elapsed since the application was made to destroy the nerve to give sufficient time for the dead tissue to slough from the living, which it will do at or near the apex of the root if time enough be given. After adjusting the rubber dam, he proceeds to gain access to the root canals by cutting freely through the crown surface of the tooth. Free access is necessary for thorough work. Next take a fine Donaldson nerve canal cleaner and push it cautiously into the canals in turn. After pushing it up as far as it will go, by giving it a half dozen turns, the nerve will be caught up by the barbs and wound around so that it can be brought out entire, in the majority of cases. After cleaning as thorough as is possible in this way, proceed to enlarge the orifice of each canal with a large size Gate's Glidden drill in the dental engine, about one-third of the way down. These drills will not follow a curved canal, but they will come as near doing it as any, and if carefully handled, there is very little danger of breaking them off. Of course great care must be taken, and they must be frequently withdrawn and cleansed to prevent them becoming clogged, fastened in the canal and twisted off. Next take a smaller size and enlarge nearly to the apex, if the canals appear straight, but if the drill turns hard the canal is probably curved, and should not be enlarged any further. After enlarging the upper third of a curve canal you will find that you can then with more ease pass a cleaner up to the apex of the root for the purpose of removing the remaining debris. Success in a great many instances depends upon enlarging. In the first place you cannot fill a canal with any material that it is difficult to pass a fine broach into. Then in enlarging you cut away a great deal of dentine, the tubuli of which have become infiltrated for a short distance with putrescent fluid, or fluid that is impregnated with organic matter and would in time become putrescent. Enlarging the orifice of oval or flat canals renders them round, and consequently more easily filled with gutta percha cones, or any other material. Next finish cleaning with a few fibres of cotton, which very effectually remove all drill dust and other debris, and after drying with warm air, pump the canals full of eugenol or eugenic acid. He seldom treats an abscess, as nature attends to that part of the work after the cause of disturbance is removed. After waiting a few minutes for the eugenol to be absorbed into the tubuli of the dentine, which it will readily do as it is very penetrating, the excess may be removed with bibulous paper, and if no soreness or inflammation exist, proceed to fill at once with no apprehension of any further trouble. But if the tooth has been devitalized an indefinite time, and decomposition has already set in, and given rise to incipient pericementitis several times before the patient was aware of the mischief, and no fistulous opening exists, the presence of blind abscess should be suspected and great care taken. In cases of this kind, after finishing the process of cleaning, which always can be done at the first sitting, he usually fills the roots with cotton saturated with eugenol and stop up the crown cavity to exclude moisture for a week or ten days, instructing the patient that should any soreness arise to call at once. If no indications of pericementitis exist, the dam is adjusted and the cavity made dry with warm air, he then fills. No water or saliva is allowed to enter the canals after they have once been cleaned and dried, unless the apical foramen is unusually large and admits moisture from that direction. Microbes and their spores thrive but little without moisture. Cases of this kind are more complicated to treat, and the cotton in the root canal should be frequently changed, and fresh medicaments introduced to prevent the formation of mephitic gases. Care must be taken to avoid the pumping motion in introducing medicines in this class of cases, whereby moisture may be drawn into the canals through the apical foramen. In cases of decomposing pulps and putrescent canals, if a fistulous opening exist through which drainage can be accomplished, immediate root filling is generally permissible. In filling the canals he uses oxychloride in preference to any other material. It is easily manipulated, possesses no sticky qualities, and if mixed thin gives plenty of time to pump two or three canals full, as the case may be, or they may be filled one at a time, making a new mixture for each canal. Oxychloride is a disinfectant, and seems to produce a drying effect on the dentine in contact with it, in the process of setting. Eugenol the writer speaks well of. It possesses no escharotic properties, as does most other antiseptics and disinfectants, and does not coagulate albumen. There is no danger of producing irritation by pumping it through the apical foramen. The odour is that of oil of cloves, and is not very objectionable. It seems to penetrate the tubuli of the dentine and promptly check all putrefactive changes in organic matter. It possesses all the good qualities of carbolic acid with none of the bad.

Literary Notices and Selections.

THE DECIDUOUS TEETH: THEIR ERUPTION AND REMOVAL.

By C. N. Peirce, D.D.S.,

Professor of Dental Physiology, Dental Pathology, and Operative Dentistry in Pennsylvania College of Dental Surgery.

(*Continued from page* 970.)

A further illustration from the same author is given from "Comparative Anatomy:" "The tooth of a crocodile moves upward, tooth-pulp and all, obviously impelled by something different from mere elongation; and my own researches upon the development and succession of reptilian teeth clearly show that a force quite independent of increase in their length shifts the position of and erupts successive teeth. But what the exact nature of the impulse may be is an unsolved riddle, the explanations which I have read being, to my mind, less satisfying than the admission that we do not know."

In reference to impacted teeth, *i. e.*, teeth whose elevating or eruptive tendencies have been restricted or entirely obstructed from any cause, whether it be unabsorbed bone or indurated gum-tissue: when the root completes its development under such unfavourable conditions, it is usually stunted, or curved (more frequently the latter) in the direction where the surrounding tissue yields most readily. Hence the curvature of the roots is invariably posteriorly, or toward the tuberosity, or the ramus, as the tooth may be located in the superior or inferior maxilla.

Teeth in a horizontal position, or inverted, as sometimes occurs, are subject to the same law of progress or projection, that is, in the line of the least resistance. All such teeth, when once fully formed without being erupted, make very slow process towards the mucous surface, except when adjacent or overlying teeth are extracted; then the necessary absorption of their alveoli exposes to view the previously imbedded teeth. There is a mechanical force, however, acting on all such teeth, tending to bring them to the surface, the same as that which induces the elongation or protrusion from the socket of an unantagonized tooth. The repeated closing of the jaws must exert, to a large extent, this mechanical force, just as the bung in a barrel is elevated by a blow being struck upon the stave on either side of it.

With normally erupted teeth, from six to eight months after birth, the bony crypts, which have scarcely completed the protective cell for the partially calcified tooth-germs and follicle, begin to be absorbed. This process goes on with considerable activity until the labial or outer wall of the alveoli is removed, which takes place in advance of the portion covering the cutting edges. The temporary teeth are not all in the same progressive stage of development; hence we find that while some of the anterior teeth are being freed from their bony incasement the posterior ones are still retained within their crypts, or it may be that some of them are but perfecting their inclosures.

The absorption of the process from the incisor crowns takes place in the average child at seven months of age. The labial surfaces and cutting edges are free from the bony covering, while the lingual and palatal surfaces are yet protected by the spongy bone which forms part of the crypt of the permanent successor. As soon as these crowns have freed themselves from their bony surroundings and have perforated the superimposed gum, the alveolus rapidly develops around the necks of the teeth and the elongated roots, the depth of the anterior part of the jaw increasing rapidly by this process; and as the molars are erupted, a similar condition in the posterior part of the jaw is concomitant with the elongation and elevation of the rami. Charles S. Tomes says (p. 192, "Dental Anatomy"): The front teeth are erupted first, and the jaw deepens first in front; later on, the back teeth come up and the jaw is deepened posteriorly; meanwhile, the elongation of the rami has been going on slowly, but without interruption. Thus is brought about a condition of parts allowing of the whole series of teeth coming into their proper mutual antagonism."

It is very evident that the eruption of the teeth is not a continuous process, but that they have periods of growth and of rest, not only of the individual teeth, but of the teeth as a whole, as they are developed in groups or pairs, these periods of rest and growth being modified or intensified by the conditions controlling the function of nutrition.

While, as s rule, the inferior centrals are erupted first, there are so many cases where the superiors make their prior appearance that the exception must be noted. In the following text and table let it be understood that it is only intended to represent the periods of eruption of the deciduous teeth of the average child, giving a range of two or three months for the several groups or pairs, the writer believing that this will cover the large majority of cases.

The deviations from this "time," as just stated, may be earlier by three or four months, or later by the same period. So constantly is premature development associated with abnormal systemic conditions, that it may be stated, with little danger of contradiction, that where the teeth are in process of eruption from the first to the fourth month the infant is suffering from either deficiency in quantity of blood or deficiency in some important constituents of the blood (anæmia). On the other hand, a delay in the eruption from the tenth to the thirteenth month as frequently finds the subject vigorous in body, with the nutritional condition representing all that this implies. The lateral incisors are usually from one to two months later than the centrals, and, reversing the order of the centrals, the superior laterals invariably precede the inferior. The first molars next in order have their cusps uncovered by the absorption of the gum from four to six months subsequent to the appearance of the laterals, there being no regularity in the priority of their eruption in one jaw over the other.

The cuspids, following with about the same intermission, make their appearance between the lateral incisors and first molars; their progress is remarkably slow, and sometimes their eruption is delayed until after the appearance of the second molars. Various reasons have been ascribed for this delay. Trousseau thinks it is due to the greater length of their roots, but the probability is that, coming between teeth already in place, they have a denser and thicker tissue to penetrate. A longer time is required for the removal of this tissue and for the completion of the root, which latter process must be reckoned as one of the factors in bringing the crown into place. The experience of the writer has been that the eruption of these cuspids, when occurring during the months of July, August, and September, invariably induces greater systemic disturbance than any of the other groups would under similar circumstances.

The eruption of the second molars usually follows close upon that of the cuspids, probably not more than one or two months intervening. With these the deciduous or temporary dentition is completed, usually during the first two months. A delay in the beginning of the eruptive process is not necessarily followed by a corresponding delay in its completion. The writer has been acquainted with three families where no teeth were erupted before the eleventh or twelfth month and without unusual systemic disturbances.

At the sixteenth week of fœtal life the follicle which incloses within its folds the enamel and dentine organs or germs of the future tooth is closed, and the epithelial band, which has thus far served to hold these germs in connection with the epithelium of the surface, is broken, and the prospective tooth-germs are in what may be called the second stage, or saccular condition. Quickly following this, lime-salts are deposited upon the surfaces of these two organs, and a cap of dentine and a layer of solidified enamel-cells represent the shape and density of these two dental tissues. From the first appearance of these layers of solidified structures a process has begun which, when carried to its normal completion, must result in a dental armature completely occupying the alveolar ridges of a two-year-old child; and from the beginning of this process we shall, for convenience, date the growth of the hard dental tissues, following them in the subjoined table from the commencement of calcification to their completion and arrangement in the dental arches, as follows:

17th week of embryonic life, enamel and dentine of central and lateral incisors begin calcification.

18th week of embryonic life, and dentine of molars and cuspids begin calcification.

20th week, calcification of crypts which incase enamel and dentine germs begins.

40th week, or at birth, calcification of incisor crowns quite complete and roots begin to cacify.

3 months after birth, cuspid and molar crowns complete and roots begin to calcify.

6 to 8 months, central incisors erupted.

7 to 9 months, lateral incisors erupted.

14 to 16 months, first molars erupted.

17 to 18 months, cuspids erupted.

18 to 24 months, second molars erupted. Temporary dendition complete.

While the above table represents the average eruption of the deciduous teeth, there are many exceptions representing tooth eruption at earlier and later dates. As above stated, the earlier are usually the infants less vigorous in constitution than normal, waste exceeding supply, while the later periods are most frequently confined to those of good recuperative power and other favourable systemic conditions.

At the time of the eruption of the deciduous or temporary teeth the apical end of the root or roots is not necessarily completed in its calcification, and oftentimes some months elapse after the tooth has taken its place in the arch before the foramen in the end of the root is reduced to its normal size.

The arrangement of the teeth in two parabolic curves, the superior describing a larger segment than the inferior, with the external cusps of the molars and the cutting edges of the superior anterior teeth closing a little external to the inferior, is a normal position seldom deviated from the deciduous or temporary set. The teeth when first perfected are also equal in height, so that, resting the antagonising surfaces upon a plane, all would bear equally upon it; they also stand side by side in close juxtaposition, without diastema or spaces between them.

This last is a peculiarity of temporary duration, however, and is not usually observable after the fourth or fifth year. The crypts containing the partially-developed permanent teeth which are to succeed the deciduous ones, behind or posterior to which they lie, are gradually pushing forward and occupying a more anterior position; and in this developing process the temporary teeth may be observed to be slightly separated. They are also, from the same cause, elevated from that uniform height which marks the early normal development.

The roots, which we have seen become perfected and present cone-shaped apical ends with minimum-sized foramina, are of short duration, for scarcely more than a year elapses after their completion before preparation is made for a retrograde metamorphosis, which results in the gradual dissolution of the lime-salts and a return of the organic elements in the root to their embryonal condition.

(*To be Concluded.*)

Reports of Societies.

STUDENTS' SOCIETY.
THE DENTAL HOSPITAL OF LONDON.

Ordinary General Meeting, Held October 8th, 1888.
J. F. Colyer, Esq., *Hon. Treasurer*, in the Chair.

The minutes of the previous meeting were read and confirmed.

Mr. W. R. Barrett signed the Obligation Book, and was formally admitted to membership by the Chairman.

Messrs. G. W. Welham, E. F. Smith, W. D. Moon, M. Woolf, E. H. L. Briault, W. R. Larbalestier and G. Hern were balloted for and elected members of the Society.

The following gentlemen were duly proposed and seconded as members :

Messrs. W. May, A. C. Gask, K. Schelling, H. Dormer, C. Preston, F. Lewis, F. Breese, P. Reading, R. M. C. Harrison, J. A. Rogers, C. E. Bromley, H. A. Forsyth, F. G. Hall, W. H. Davies, P. Arliss, T. White, H. Phillips, W. S. Holford, H. May A. C. Day, and Bailey King.

On Casual Communications being called, Mr. Seymour presented to the Society—

(1) A right upper molar possessing four distinct roots.

(2) A crown and two fangs of a left lower molar : the crown had been fractured clean off from a blow received

on the jaw. The roots were exostosed and were extracted with some difficulty.

Mr. Rilot gave particulars of a case which had recently come under his notice in which there was congenital absence of the second lower molars on either side. All the other teeth in the mouth were normal in size and position. The patient's age was 19, and the wisdom teeth were not yet erupted.

The Chairman then called on Mr. Black for his paper on "Irregularities of the the Teeth and their Treatment."

In the discussion which followed, Mr. Seymour agreed with the reader of the paper in thinking, that we should not resort to immediate torsion in regulating teeth, considering the danger there was of causing necrosis of the pulp. He pointed out that lateral incisors were often troublesome in the mouth, the pulp being easily exposed on account of its large size in proportion to the tooth; the great majority of abscesses in the palate being caused by laterals, and the root being shorter than that of the canine, it was a less favourable tooth for pivoting. He mentioned a case which had come under his care in which a large abscess, caused by a lateral had burst just under the eye.

He also mentioned that Mr. Hutchinson had always pointed out that *intermittent* pressure produces *hypertrophy*, *constant* pressure produces *absorption*. All regulation plates should be made to produce constant pressure.

He also thought that elastic bands should be used with caution, on account of their having such a tendency to run up the root under the gum.

Mr. Lonnon advocated the extraction of bicuspids instead of molars.

Mr. Harsant referred to the difficulties and risks attendant on the operation of immediate torsion. He also pointed out the importance of bearing in mind the great difficulty which is often experienced in retaining the teeth *in situ* after regulation.

Mr. Mountford did not agree with Mr. Black when he said that we should wait till all the teeth were through before undertaking regulation; he agreed with him in the advisability of a more frequent extraction of the bicuspids, and spoke of the great success attending the use of wedges of compressed wood and hard vulcanite for altering the position of the teeth.

Mr. Preedy described two cases which had recently been treated by Immediate Torsion. He also spoke favourably of the Balkwill method of regulating by ligatures.

The chairman in closing the discussion, laid great stress on the benefits accruing from the extraction of all the four first molars. He mentioned a method of keeping elastic bands in position on the teeth, by fixing them with thin cement, and so preventing their running up into the gum. Finally, he advised each student on undertaking a new case to think, and work out the best method of treatment for himself, and not necessarily to follow on the old beaten tracks.

Mr. Black briefly replied, after which the Chairman accorded the usual vote of thanks to Messrs. Rilot and Seymour for their casual communications, and to Mr. Black for his interesting paper, and announced that the next meeting would take place on November 12th, when Mr. F. C. Porter would read a paper on "Plastic Fillings."

The meeting was then adjourned.

Dental News.

NATIONAL DENTAL HOSPITAL.

Dinner of Past and Present Students and their Friends, Holborn Restaurant, Friday, October 19th 1888.

Mr. ALDERMAN RYMER in the Chair. Present, Mr. Thomas Gaddes, in whose honour the dinner was given, Mr. Stocken, Mr. Sidney Spokes, Mr. Felix Weiss, Mr. Morton Smale, Dean of the Dental Hospital of London, Dr. Dudley Buxton, Mr. Henri Weiss, Dean of the National Dental Hospital, Dr. George Cunningham, of Cambridge, Mr. Willoughby Weiss, Mr. Boyd Wallis, Dr. St. George Elliott, and many of the Staff of the National Dental Hospital and School, together with a large gathering of past and present students.

The Chairman, after the completion of the usual loyal and patriotic toasts, proposed the health of Mr. Thomas Gaddes, L.D.S., Eng. and Edin. He said that owing to the fact that the gentleman had decided to leave England and forsake the dental profession, it had been determined to hold the dinner on the present occasion instead of later as usual, and to convert it into a farewell banquet to Mr. Gaddes. Speaking eulogistically of Mr. Gaddes as a teacher, a leader in his profession, as a writer, and as Dean of the School, the chairman expressed great regret that the school and hospital were about to lose his services for ever.

At the conclusion of his speech the chairman presented Mr. Gaddes with an illuminated address and a very handsome gold watch, the gift of many friends as "a token of their affection and esteem."

Upon accepting the address and watch, Mr. Gaddes said, he felt his vocabulary failed him when he tried to express his feelings on the present occasion, and that, in spite of ten years of journalistic labours. With feelings of the greatest gratitude were those of profound sorrow at leaving the scenes of his former exertions. Referring to his career in relation to the National Dental Hospital and College, Mr. Gaddes said :

I joined the staff in 1878 and the School in 1878 or 9, and was flattered with the appointment of Dean. That office I have held up to within the last few days. The difficulties of this period no one was more keenly aware of than myself. They were to a great degree external. At all events, acting upon the advice which I gave to you and others (colleagues) to go on, we have gone on and done good work. It was sure to tell in the end. I might say on the present occasion the efforts of my colleagues and the little I have been able to do myself, may be recognised at the present day. The Institution, instead of being a paltry one, hanging on between life and death,is a veritable reality, and as a proof of that, I refer with pleasure and pride to our students standing round the table. If the Institution could be snuffed out, they could not be snuffed out. When I began life in 1875 I aspired high. I pitched my aspirations not in the lower rung of the ladder. Perhaps it was folly to pitch them as high as I did, at all events, the difficulties which encountered me were difficulties from without. Apart from my work as Dean, I have for the last 10 years piloted the fortunes of the *Dental Record.* To occupy the position of Editor, one ought to make friends of everyone. I found very early in my literary career I made enemies, I made antagonists, and I am glad to say, many friends. It is the attachment of those friends I esteem to-day, and when I leave England, and take up my abode in America, it will give me great pleasure to look back and count the many acquaintances I have made in my professional life in England.

Some of the difficulties I encountered were difficulties which came from those from whom you would have expected assistance rather than antagonism. I do think it an occasion, as a last chance I shall have of addressing you in England, of bringing forward complaint of the treatment, but it may be a lesson, to other men who follow in the footsteps which I have trod, not to give up because there is opposition, but rather to let it act as a stimulus to do what is set before them with a fixed determination to conquer. Natural history tells us a similar story. In Darwin's work, "The Origin of Species," we are told that in the struggle for existence, the greatest enemies are among like species. This is my experience in the profession. At the same time I wish to thank you most sincerely for presenting me with the gifts with which you have honoured me, I will carry with me and cherish as long as I can, to the end of my days."

The toast of "The Staff" having been proposed by Mr. Williams,

Mr. Henri Weiss returned thanks for the Staff:—

"You have already heard from more than one speaker of the history of the National Dental Hospital, and I will not recapitulate it. This I may say, Nature having produced the dentist, the person to relieve the disease, the inconvenience if not altogether pain to which we are all subject; a fact so patent, proves to us that we are obliged to see that gentlemen entering our Hospital must be prepared in a manner which will give the greatest satisfaction to the public and themselves, if they lay claim to become masters of this profession. When Mr. Gaddes signified his intention of leaving us it gave rise to no small amount of alarm, because we had every confidence in his rule and it was difficult to know whether our Hospital could continue in the same way without some such a man at the head as Mr. Gaddes. His departure we could not postpone and were therefore obliged to consent to it. That being so we felt that the work of the Hospital must devolve upon other heads, and whether one could be suggested as the nominal head or whether it should be carried on by a Committee was the matter for consideration. In these circumstances I was asked by my colleagues to accept the post of Dean (cheers) but the responsibilities so overawed me that I felt it quite impossible to accept it without consideration.

Well, gentlemen, sooner than leave it to confusion I agree to accept the post *pro tem.* (renewed cheers), and whether I retain it, is for you rather than myself to decide. I am willing to continue the work if I am capable of holding so important an office. With regard to our own Hospital we are exactly in the same position as was the London Dental Hospital in Soho Square—inadequate accommodation for teaching Dental Surgery. We have made application, and shall continue to do so until we have sufficient funds for erection of our new Hospital and School buildings. We have the plans and are only waiting for an old lady to give us the tenant right to a small portion of the site. I hope every gentleman will take into consideration this appeal, and interest their friends in our requirements."

The students subsequently presented Mr. Gaddes with a handsome case of instruments, obtained by a fund confined to themselves. This was presented by Messrs. Spokes and Rushton, who expressed in happy terms the warm feeling of affection and respect which the past and present students entertained for Mr. Gaddes.

Mr. Stocken proposed the health of the Chairman, who duly responded. The evening's pleasure was enhanced by some excellent vocal and instrumental music.

EDINBURGH DENTAL HOSPITAL AND THE ROYAL INFIRMARY.

A special general meeting of the directors and contributors to the Edinburgh Dental Hospital and School was held at 30 Chambers Street last night, "to consider report by the Administrative Committee upon negotiations with the managers of the Royal Infirmary as to taking a lease of premises belonging to the Infirmary, and removing the Dental Hospital and School to these premises at Whit Sunday next; and, if the recommendation of the Administrative Committee be adopted, to instruct them to conclude the necessary arrangements for this purpose."

The Dean (Mr. W. B. Macleod), who presided, said that for some time past they had been cramped for accommodation, and before now they had been trying to get a more suitable building so that their work might be done with more credit to the profession and more satisfaction to the public. They had hardly expected at this period to come to the end of their quest, but during the past two months overtures had been made to them on behalf of the managers of the Royal Infirmary as to the premises, 5, Lauriston Lane. He gave an account of the negotiations with the managers, and said that the house, as proposed to be altered, and with the addition of a pentacle to be built on vacant ground behind, would, he expected, suit their requirements for the next fifteen or twenty years. The accommodation would be very much superior to that which they now enjoyed, and the facilities which would accrue would enable them to give the students a better education than they had been able to do.

Mr. Lindsay Mackersy, hon. secretary, submitted the report of the Administrative Committee, which recommended that the following arrangements should be agreed to:—That the Infirmary let the house to the Hospital for fifteen years from Whit Sunday 1889 at £65 per annum, with a break every five years on a year's notice; that the Infirmary make certain alterations on the building; that the Hospital afterwards make any necessary alterations, except keeping the house air and water tight; that the dental surgeon, during hospital hours, should be at the call of the Infirmary managers for operations in the wards; that one of the staff of the Dental Hospital shall attend at the Infirmary at the ordinary visiting hours, for the purpose of attending cases requiring treatment, and that these should be open to medical students; and that the students should be entitled to hold a further course at the Hospital for three months, on payment of a fee.

The Chairman then described and explained a plan of the house, consisting of four flats, including a ground flat, and the proposed alterations. Regarding the proposal to make arrangements for the attendance of a dental surgeon at the Infirmary once a week, he said they had thirteen gentlemen whose services could be so used. As to the course of dental instruction to such medical students as might desire it, he said the students were generally medicals going into the army navy, or foreign mission service.

Dr. Smith mentioned that at his resignation of the dental surgeonship of the Royal Infirmary, which he held from 1863 up till last June, he had had considerable experience in what was wanted at the Royal Infirmary, and he thought that what was now proposed was likely to fulfil all the requirements of that institution. What was now proposed very closely resembled the suggestions he brought before the managers at his resignation. He moved that the meeting approve of the report of the Administrative Committee, and empower them to carry the suggestion into effect.

Dr. Peel Ritchie, in seconding, said it seemed to him the Dental Hospital was going to get a very good bargain. As managers of the Infirmary, they had to see that the funds did not suffer, and to offer as many advantages as possible to the students. He thought the Dental Hospital was getting still further opportunity of adding to its usefulness, and that the Infirmary would benefit by the arrangement.

Mr. Hepburn also spoke approvingly of the scheme. The motion was unanimously adopted.

The chairman remarked that the bargain would be an advantage to both parties. Votes of thanks to the Chairman and the honorary secretary closed the meeting.

BIRMINGHAM DENTAL HOSPITAL.

THE twenty-ninth annual meeting of subscribers to the above institution was held yesterday, at noon, in No 1 Committee Room of the Council House, the Mayor (Alderman Pollock) presiding.

Among those present were Major-General Phelps, Messrs. J. H. Chance, Henry Davis, J. A. Jones, L. Platnauer, A. Turner, Frank E. Huxley, H. B. Neale, J. W. Wilson (hon. treasurer), Arthur Addinsell (hon. secretary), and C. W. A. Hodges (registrar). Apologies for absence had been received from Mr. Jesse Collings, M.P., Mr. E. F. Booth, Mr. Charles Gosling, and Mr. F. W. Richards.

The report of the committee showed that during the year ending July 31st, 1888, the number of patients treated was 9,864, and that the operations were as follows :—Extractions, 8,783 ; fillings, gold, 128 ; other, 1,041 ; miscellaneous and advice, 1,992 ; anæsthetic cases, 464 ; total number of cases treated during the last four years, 42,154. The anticipations of the committee with regard to the adoption of a 6d. registration fee for patients above ten years of age have been fully realised. During the first six months the sum of £86 18s. 6d. was received in fees, and the scheme was found to work smoothly and well; both patients and subscribers having expressed themselves equally pleased with the arrangements. The committee felt that the time has arrived when it is necessary for the number of subscribers notes to be reduced, and accordingly they suggested that subscribers of £1 1s. receive six notes instead of eight, and subscribers of 10s. 6d. receive three notes instead of four, but subscribers shall have the privilege of purchasing extra tickets at 2s. each. The committee received £40 12s. 4d, from the Amateur Opera Company (per Mr. S. Royle Shore, jun.), being the proceeds of a special benefit performance in aid of the funds.

The Surgical Committee, in their report, stated that the marked success of the new registration arrangements has been very gratifying to them. The report of the operations during the year shows the important influence the registration has had in facilitating the greatly improved conservative treatment which has been carried out in saving teeth by filling. It has also enabled the staff to carry out an increased number of important and urgent operations under anæsthetics. The appointment of the two extra assistant dental surgeons has greatly aided in efficiently carrying on the increased work of the hospital in the filling and anæsthetic room. The staff had pleasure in calling attention to the manner in which the students have attended the hospital practice. The regularity of their attendance, and the careful attention to the cases entrusted to their care, has been very gratifying to the staff and beneficial to the patients. The position of the hospital as a means of educating the dental surgeon of the future is now firmly established, and it affords the best facilities to medical students for acquiring a practical knowledge of the diseases of the teeth and their treatment. The staff look forward with confidence to the continued increase to the aid afforded to the suffering poor of the town and surrounding districts. The balance sheet showed an income from subscriptions of £100 3s.; from donations, £25 10s.; from the Hospital Saturday Committee, £16 6s. 3d.; from the dramatic performance alluded to in the report, £40 12s. 4d.; from the charity box, £14 9s. 5d.; from rents, £76 15s. 5d.; and from registration, &c., fees, £86 18s. 6d. The expenditure, including the deficit balance of the beginning of the year, amounted to £383 2s. 1d., and the year closed with a reduced deficit of £22 7s. 2d.

The Mayor, in moving approval of the report and balance-sheet, said the most important feature of the year's work was the institution of the registration fee, which seemed to have worked very satisfactorily. It had apparently resulted in some diminution of the number of persons using the hospital, the total number of cases treated during the past year having been 9,864, as compared with 12,000 in the previous year, but the decrease was in the number of simple extractions, and in the more important cases there had been an actual increase, which had necessitated the appointment of two assistant dental surgeons. The financial statement was more satisfactory than the one presented a year ago. Almost every item in the receipts had increased—the subscriptions were 20 per cent. greater, the donations 15 per cent. higher, and even the charity box showed a slight advance; and in addition they had received help from the dramatic performance and from the Hospital Saturday Committee. On the other hand, the expenditure had somewhat increased, but whereas last year the accounts closed with a deficit of £94 7s., now the balance due to the bank was only £22 7s.2d. They were therefore in a much better position, but if the committee were to carry out the structural alterations they desired in order to render the work of the institution more convenient and complete, it would be necessary for the public to increase the amount of aid rendered, and he felt convinced that it only required that the facts should be known to ensure the needed funds being subscribed.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

During the October sittings of the examiners the following gentlemen passed the first professional examination for the license in Dental Surgery :—

John Thomas Craig, Warwickshire; Frederick Jones, Lancashire ; Edwin Eli Johnson, Lincolnsnire ; Henry Mallett Devonshire ; John C. Macnamara, Cumberland ; John Stewart, Edinburgh; and Samuel A. Westerton, London; and the following gentlemen passed the final examination, and were admitted L.D.S. Edinburgh :—William Gray, Edinburgh ; Edward John Montague Hodgkisson, London : and Arthur Turner, Aylesbury.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

NEXT Meeting of this Society will take place Nov. 5th, 1888. Business—Paper: By Mr. F. J. Bennett, "On Certain Points relating to the Structure of Dentine."

Casual:—" Presentation of Models showing early development of the Wisdom Teeth," by Mr. Boyd Wallis; and a Communication by Mr. W. H. Woodhouse.

C. J. BOYD WALLIS, }
WILLOUGHBY WEISS, } *Hon. Secs.*

A CAUTION TO DENTISTS.

Wallace Jones was summoned for carrying on business in Ulverston as a dentist without being duly registered—Mr. Poole appeared in support of the information.

Thomas Edward Jones said he knew the defendant. He lived at No. 22, Queen-street, Ulverston, where he carried on business as a surgeon dentist. His (defendant's) father did not live there.

The Chairman: Are you a dentist yourself? Witness: No.

Defendant said the business was his father's, and he simply worked for him.

Mr. John Blacklock proved the publication of an advertisement headed "Mr. Jones, surgeon dentist." The order for the advertisement was signed by George E. M. Jones.

Defendant's father appeared and produced his certificate of registration. He declared that this case had emanated from spite, adding that the witness ought to have been the last man in the world to have brought it, as he had a set of teeth he had not paid for.

Susannah Cavanagh stated that in May last the defendant repaired some teeth for her, and she made a payment to his brother.

Mr. Poole said neither father nor son were registered in the Dentists' Register for this year, and for acting without being registered were liable to a penalty not exceeding £20.

For the defence Edwin Merivale Jones, father of the defendant, said at present he worked for himself and another gentleman in Liverpool. The business in Queen-street, Ulverston, was his own, and he paid the rent. His son simply worked for him. He instructed him. During the past eight months he had been probably five times to Ulverston to see how he was getting on with his work. His name had recently been erased from the Dentists' Register owing to change of residence, but he could always get it replaced by paying a fee of 5s. He contended that he was properly qualified, as the certificate produced showed.

The Bench considered the case proved, and imposed a fine of £1 and costs.

VACANCY.

Dental Hospital of London a London School of Dental Surgery, Leicester Square, W. C. The Post of Lecturer on Mechanical Dentistry is vacant. Application to the Dean.

ANSWERS TO CORRESPONDENTS.

Mr. Cronin, London; "The Medical Sickness and Life Association."—You can obtain full particulars by applying to the Honorary Secretary, Medical Sickness and Life Assurance Association; c/o Editor of British Medical Journal, 429, Strand, W.C. The office of the Health Insurance Corporation, Limited, is New Broad St. House, 25-35 New Broad St. E.C. The Secretary will send you full particulars.

Chemicus.—We cannot publish your letter, it is too personal, and reads as if you had some spite against the individual you attack. If you will send us a more temperate letter containing straightforward statements of facts and argument we will insert it.

To Correspondents who Send Newspapers.—We constantly receive dailies and so on, but as no mark is put calling attention to the point of interest, they are thrown away upon us. 'Life is short and art is long' so please score round with a red or blue pencil any passage you wish us to read.

Communications have been received from—

Secretary, Charing Cross Hospital; Secretary, College of Surgeons and Physicians, Edinburgh; Secretary, Edinburgh Dental Hospital; Secretary, Birmingham Hospital. Mr. Willoughby Weiss, London; Mr. Cronin, London; Secretary, Odontological Society, London; Mr. R. H. Woodhouse, London; Mr. Boyd Wallis, London; "Reader"; Mr. Thompson, Glasgow; Mr. P. Parson, Bristol; Mr. Gay; Editor, Journal British Dental Association; Dr. Cunningham, Cambridge; Mr. Henry Albert, London. Mr. J. F. Colyer, London.

British Journal of Dental Science.

No. 500. LONDON, NOV. 15, 1888. VOL. XXXI.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By DUDLEY WILMOT BUXTON, M.D., B.S. Lond.

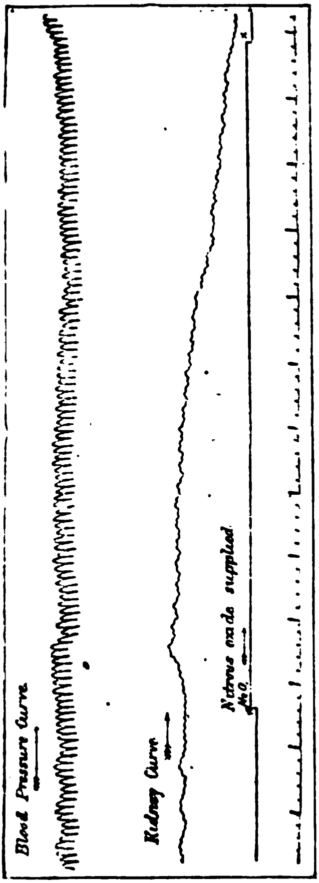
Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

(*Continued from page* 932.)

This effect of nitrous oxide is well shown in fig. XI. which contrasts with Fig. XII. wherein is given the effect of simple asphyxia upon the blood pressure. The figures are selected as showing the results during short ~~experiments,~~ since it is desirable to eliminate the possible asphyxial complications of prolonged nitrous oxide inhalation on the one hand, and to avoid on the other, the very marked effects of later asphyxial processes, since none such ought to be taken as comparable to those of nitrous oxide narcosis.

As soon as nitrous oxide inhalation is pushed far enough for asphyxial symptoms to supervene, the characteristic physiological effects of the gas,—lowered blood pressure, &c., become lost in the opposite phenomena of suffocation. Thus, blood pressure rapidly rises, the respirations become irregular and ineffectual, and the heart shows signs of weakness. Comparing Figs. XI. and XII. we see, nitrous oxide has fully saturated the blood (Fig. XI.) but all the exhalations are escaping; that blood pressure in the systemic arteries is slightly lowered but the lowering is quite trivial and what is very remarkable is that it becomes most rapidly lost as soon as the animal ceases to breathe the gas. Indeed, for some short while the pressure is raised after fresh air is allowed to enter the lungs. The fall of blood pressure in the kidneys is far more marked

FIG XI.



The upper line shows the blood pressure trace taken from carotid.

The second line is taken from the left kidney enclosed in an oncometer and shows the variations of blood pressure in the kidney.

The third line shows the duration of the experiment.

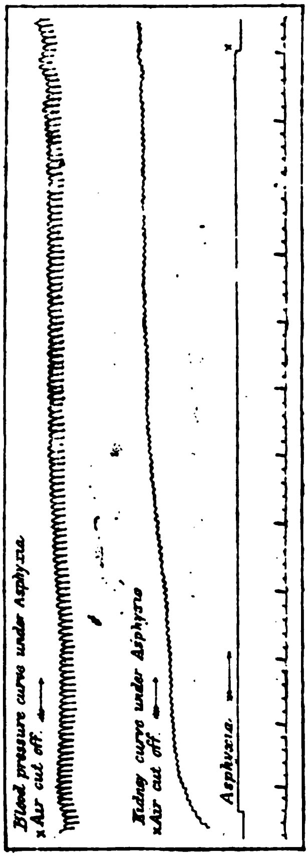
N^2O being inhaled from the mark x, to the other mark x.

The bottom line is the time marker.

The tracings are to be read from left to right—⅓ size.

under nitrous oxide but rapidly disappears when air is again respired. Under asphyxial conditions, Fig. XII, the blood pressure in the systemic arteries and the kidneys is gradually but constantly raised, and this *ab initio.* It should be remarked that asphyxia is a slow, nitrous oxide narcosis a rapid process; to kill by asphyxia takes several minutes, to kill by nitrous oxide only about half the time is required.

FIG. XII.



Upper line shows carotid blood pressure during a period of asphyxia.

The second line shows blood pressure, &c., in the kidney enclosed in an oncometer.

The third line marks (between x,x,x), the duration of the experiment, and the bottom line is the time marking record.

Tracings to be read from left to right,—⅓ size.

I have dwelt somewhat at length upon this aspect of the question, because there are some persons who, even now, cling to the idea, that nitrous oxide narcosis is due wholly, or in part to asphyxia, and who seek to explain the phenomena by reference to suffocative symptoms, and what is worse, who when called upon to narcotise with laughing gas, employ methods which permit more or less asphyxial complications to be present instead of trusting to the physiological action of the nitrous oxide. The proof, which I venture to think my experiments have afforded, 1st, that nitrous oxide is in virtue of its own inherent properties a powerful anæsthetic, and 2nd, that the phenomena of nitrous oxide narcosis and asphyxia are distinct and very different, has a most important bearing upon the present subject, since no honest physician could recommend patients to submit to nitrous oxide administration if it were really a modified form of asphyxia, when those patients suffered from any form of obstructive lung disease, when the heart were dilated, fatty, or its valves incompetent or stenosed, or when visceral disease or imperfect blood aeration were present. When, however, we know, as I submit we do now know, that nitrous oxide is not an asphyxiant, we are justified in saying that none of the diseased conditions above named really contra-indicate the exhibition of nitrous oxide. But to this point we shall revert later on in this paper.

Before closing the account of the circulation under nitrous oxide it seems advisable to epitomise the results of my researches upon the effects that gas produces upon the cerebro-spinal axis, results which appear to hinge largely on vaso-motorial changes. The experiments are described in full in the Transactions of the Odontological Society of Great Britain for 1887, and showed that so far from there being any lowering of tension in the arterials of the cerebro-spinal axis with draining away of the blood, there was an increased flow of blood alike to the brain and the spinal cord, but there was at first no sign of capillary stasis. That is to say, the filling of the vessels was a phenomenon apparently quite irrespective of any capillary stasis were such to exist. This passage of blood to the nerve centres was found to occur even when the bony case covering in the brain and cord was removed so that no theory based upon the possibility of pressure being exerted upon the nervous tissue by the osseous calvarium is rendered wholly untenable.

In studying the vaso-motorial effects of nitrous oxide upon the splanchnic area, one is met by great difficulties. In the case of the kidney, however, our knowledge is exact. From my experiments made upon that viscus as is seen in the tracings (see Fig. xii.) taken when the oncometer is used, the effect of nitrous oxide is to lower the arterial tension, leading to a shrinking of the whole organ. In asphyxia, on the other hand, (see Fig. xiii.) the kidneys become engorged, and a state of things comes about which must prove most highly detrimental in the case of persons whose renal functions are impaired or liable to derangement by congestive attacks.

Passing on to the *Nervous System* we are struck by several phenomena of more than passing interest. The sedative effect of nitrous oxide appears to affect the brain centres before those of the cord; and motor before sensory. Persons incompletely narcotised by nitrous oxide record, that they felt the touch of the instruments, etc., but were powerless to move their arms, or to vocalise effectually. There is, however, no true muscular paresis, the nerves to the muscles and the muscles appear little if at all affected, the cerebral and cord nervous tracts being alone "stopped" in their function. The following quotation from a paper read by the present writer, before the British Medical Association in 1887 at Dublin,* throws considerable light upon the conditions brought about in the brain and cord centres when laughing gas is administered to complete necrosis.

Speaking of the phenomenon of Ankle Clonus I say, "Now, whatever view we adopt with regard to the production of ankle-clonus, we have to further explain how, under nitrous oxide the cerebro-spinal axis, the peripheral nerves, or the muscles, become so altered that this phenomenon can appear and vanish with recovery from brief narcosis. We know that the brain influence normally overrides spinal reflexes, and so we might suppose that the abrogation of cerebral function which obtains under nitrous oxide, by cutting off inhibition, would leave the cord-centres free play to act. In support of such a view, we havo the fact, well-known to every practical anæsthetist, that in a certain number of cases the micturition and defæcation centres in the lumbar cord cease to obey the controlling centres, and extrusion of urine and fæces occurs. Or, upon the other hand, it appears open to suggestion that not only is there a cutting off from the higher or cerebral control centres, but the spinal cord itself appears to become profoundly affected. This influence travels down the cord, removing its action in the case of superficial reflexes, and at length abrogates the deeper reflexes, while it promotes the condition favourable for the production of ankle-clonus."

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* A Note on Ankle-Clonus, with Special reference as to its Production under Nitrous Oxide Gas. Read in the Section of Medicine at the Annual Meeting of the British Medical Association, held at Dublin, August, 1887, by Dudley Wilmot Buxton, M.D., B.S.

Referring to the swelling up of the brain and spinal cord under Nitrous oxide, it is further said, "I have elsewhere shown* there can be little doubt that it is of vaso-motor production. But whatever may be such vaso-motor changes, it is clear that the delicate structures of the cerebro-spinal axis must be subjected to considerable pressure—not, of course, from without but interstitially. Again, it cannot be doubted that such pressure exerted upon nerve cells and nerve fibres must interfere with or wholly abrogate the normal function subserved by these structures, and would, in fact, place them in the position of nerve structures which, being sclerosed or otherwise diseased, were disabled from physiological activity. There is this difference, however, that the condition consecutive upon nitrous oxide administration is very transient, and so deranges function, while in most cases, it leaves no persistent anatomical alteration in the cerebral and spinal centres. We thus see that actual physiological changes are observed in the brain and cord under nitrous oxide; and, viewed clinically, symptoms representative, or rather the clinical correlative of the structural variation, show themselves. Of these clinical correlatives, we are at present only concerned with ankle-clonus.

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* Trans. Odontological Society of Great Britain, Vol. xix. p. 90, etc.

The loss of control of the higher centres—the "let-go" theory,—as it has been called—*i.e.*, that the normal control exercised by the higher or brain centres over the spinal cord centres are in temporary abeyance, may come into play when nitrous oxide is given, by reason of a blocking of the cerebral centres through the vaso-motor changes above described. But the same variation in blood-pressure occurs in the spinal cord, so that, even admitting the cogency of the arguments favouring the "let-go" theory, I think we must admit that the development of ankle-clonus under nitrous oxide points to other adjuvant conditions. In support of this contention, it should be remembered that, while cerebral control is always lost, ankle-clonus is not always elicited under nitrous oxide. I would suggest, that while the brain's influence, being more or less cut off, may predispose the cord to exhibit its intrinsic powers, that further, a direct influence is exerted by nitrous oxide upon the nerve centres of the cord, which influence is of such a nature as to make the production of ankle-clonus possible.

That some marked changes are effected in the cord, correlative with the anatomical ones above described, admit, to my mind, no shadow of doubt; for, not only do we get well marked cloni, but opisthotonos, emprosthotonos, and well marked rhythmic jactitations attend nitrous oxide administration in a certain number of cases. The clonic and tonic contractions, it should be observed, so occurring, are quite different from the irregular convulsions, the result of stimulation of convulsion centres, brought about by asphyxia.

In speaking of ankle-clonus as elicited in organic disease of the spinal cord, Gowers* draws attention to the fact that in some persons, in whom disease has advanced, any attempt to elicit ankle-clonus induces other reflex acts by, it would seem, an overflow of the stimulus over a too excitable cord area. The condition to which Gowers thus draws attention I have repeatedly met with in persons subjected to nitrous oxide administration.

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*Diseases of the Spinal Cord, vol. i.

And, further, it does not appear to me to be at all unlikely that the muscles themselves are more or less thrown into a condition resembling the hypertonicity, *i.e.*, an excessive tendency to contract which Hughes Bennett finds so frequently associated with functional paresis and paralysis, and which Tschirjew suggests as an exaggerated phase of a natural reflex tonus.

I am, then, inclined to submit that ankle-clonus, as occurring during the administration of nitrous oxide gas, is dependent upon changes, probably of an irritative character, occurring in hypertonic muscle, and brought about by like changes in the whole nervous area. Undoubtedly, sensory as well as motor nerves have their function vastly changed under this gas, a condition of hyperæsthesia being succeeded by one in which all sensation is lost.

But nitrous oxide, besides acting as a brain sedative, possesses an initial stimulating influence. Thus when first inhaled there is a decided increase of perception alike of tactile, common and special sensation producing as a result an excessive sensibility to sound, light, pain, &c. The occurrence of this condition of hyperæsthesia makes it so important that all operators should wait until complete narcosis has been brought about before attempting any pain giving manœuvres. The power of mental control is also abrogated under nitrous oxide, and hence transitory, and even pseudo-permanent hallucinations occur; while, in the predisposed attacks of insanity are recorded by Dr. Henry Savage, late of Bethlehem Hospital. Indeed it seems probable that nervous tissue is either directly or indirectly affected, and to a considerable degree; thus epileptics, are liable to seizures, hysterical and neurotic individuals seem more prone to lose their control, under its influence than under ordinary conditions. In accepting these statements, however, due regard must be had to the environing circumstances, fear, excitement, &c., conditions themselves consistent with a tendency to loss of mental control, and imitation of convulsive attacks. Stimulation of the lumbar centres is common under nitrous oxide, which may lead to urination, expulsion of fæces, and genital irritability, in both sexes.

Upon the Respiratory system, nitrous oxide has the following effects. The breathing, often hurried and shallow when the individual commences inhaling, becomes slowed, and at first full, but as the gas begins to take complete hold of the patient the respirations grow more shallow, until at length, if the inhalation be persisted in, they cease altogether, although the heart continues to beat with regularity. This cessation of respiration is probably due to narcotising of the nervous centres in the Medulla Oblongata which controls the rhythm of respiration, for if artificial movements of breathing are carried on, air enters the chest readily enough and the individual soon resumes normal respiration.

Upon the hepatic, renal, and gastro-intestinal tract nitrous oxide appears to exercise but little effect. In Fig. XI is shown the effect it has upon the kidney. The tracing is from an oncometric experiment, the result shows that the blood pressure—the best criterion of functionation in a glandular viscus—is only slightly affected, there being a slow and gradual fall. This contrasts with the rise of pressure which obtains under asphyxial conditions. See Fig. XII.

We should conclude from numerous oncometric tracings that no violent interference with the metabolic changes in the kidneys will occur during the administration of, or as a direct consequence of nitrous oxide.

(*To be continued.*)

A STUDY OF THE PRACTICE OF FILING AND OF EXTRACTING TEETH FOR REAL OR ALLEGED BENEFITS.

By J. Morgan Howe, M.D.S., M.D., New York, N.Y.

(*Concluded from page* 999.)

The most notable facts thus far presented opposed to his view of the subject are the two cases given by Dr. Brackett,* in which it is clearly shown that the evils referred to by Dr. Davenport do not always follow the extraction of first molars, but that it may produce the best results. In these two cases the teeth were removed at the ages of eleven and twelve and a half years respectively, and it does not appear that there is either the shortening of the bite or any driving forward of the upper incisors by the lower, which Dr. Davenport anticipates from the study of the perfect denture; nor do the internal rows of cusps of the upper and lower arches show separation. Dr. Brackett states that in one case the incisors were irregular, and I infer that it was so in the other also, for he says, "No appliances were needed to correct the irregularities." This condition of irregularity or prominence of the anterior teeth is that which in my own experience has been attended with the most favourable results when I have resorted to extractions. It will also be remembered that the molars removed by Dr. Brackett were all "extensively" or "largely" decayed; an additional weighty reason for the operation, which has been shown in these cases to have been so wisely performed.

The question that interests us here is, *why* were these extractions followed by such good results? and *how* shall such mistakes and mutilations as Dr. Davenport has shown be avoided? It does not seem to me reasonable to conclude because injury has been and is being inflicted by extractions, that the rule *never extract* must be adopted; for, in order to arrive at such a conclusion, we must refuse to recognize the fact that nature has failed to provide man with a perfect denture, and also the other fact that imperfect and distorted dentures have been improved by extraction.

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* Illustrated in the Dental Cosmos for September, 1887.

Shall we not, then, begin to set in order what knowledge we have and can obtain of all the conditions which have preceded both favourable and unfortunate results from extractions, in order to a better understanding of the causes of success and failure? With this desire I present a few cases which seem to throw some additional light upon the subject.

Another cast represents the teeth of a boy in his thirteenth year. The left superior first molar had been lost before I saw him; both of the inferior first molars were very poor in structure and largely filled; the pulp of one was dead. The superior cuspids, which were just erupting, had very little room for regular alignment, and there was some crowding of the superior incisors. On account of these conditions, and the hopeless condition of the first molars for permanent preservation, I had the latter removed in June, 1874, before the eruption of the right inferior second molar or of either of the inferior first bicuspids. The case received no other treatment except the filling of cavities in the teeth.

Another cast represents the same case at the present time. The same irregularity of the incisors is apparent; it is, in fact, rather increased than diminished; but this is not in any way due to shortening of the bite, for the length of the bite is *increased;* the second molars have moved forward to the second bicuspids with very little rotation on their axes, and no perceptible tipping. The third molars are in place fully developed, and the articulation, both from an outside and an inside view, leaves very little to be desired.

A careful examination of the two models makes it evident that the forces of dental development must have been superior to those of the muscles which close the jaw, for the length of the bite, instead of being reduced, is increased.*

The partially developed second bicuspids have fully developed, and the first bicuspids—which had not appeared when the molars were extracted—have developed to their normal length; all the molars and bicuspids appear longer than in the earlier model, and as the lower incisors do not shut so far up, behind the points of the upper incisors, there seems to be no doubt that the bite is actually lengthened. I call attention to this fact, which I have not seen before recorded, because there have been other cases which have seemed to me to present similar changes; a physiological elongation of the bite, even after the thirteenth year.

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* DENTAL COSMOS, July, 1887, p. 424. Dr. Davenport says that the bite will be shortened "if the first molars are lost before the eruption of the bicuspids."

After the loss of the molars the bicuspids evidently moved back, so allowing the superior cuspids to develope in good position; but the development of the third molars occurred before the upper incisors were permitted to move back, the second molars having been crowded forward, and all spaces anterior to it closed, by the force exerted through the third molar. The same force has been sufficient to crowd the superior incisors further forward than they were, for on the right side they are further in advance of the lower incisors than they were originally, when the teeth are closed.

The third molar will be referred to later, as a factor, and an element of uncertainty, in the results following extractions.

A model (shown) represents the mouth of a young lady sixteen years of age, as it was when she came to me in April, 1877. A fine set of teeth—as may be seen by the first molars set in the plaster—somewhat crowded; the anterior teeth inclining forward, and slightly irregular, the lower incisors striking the lingual surface of the upper incisors midway between point and neck; the four second molars fully developed, and the left inferior second bicuspid retarded in development by the crowding forward of the crown of the first molar. It was decided to remove the first molars in this case, because the arches were already rather too large for harmony with an otherwise handsome face. There was no reason—excepting consideration of facial expression—why the arches should not have been enlarged,—in fact this procedure had been advised by an eminent dentist; but to my perception there was already an expression of *too much teeth*, and for that reason extraction and contraction were thought advisable rather than expansion.

Another model represents the same case two years later. Impressions taken in April, 1879. The six anterior teeth of both upper and lower arches have fallen back, so as to appear less prominent. All the teeth posterior to the cuspids are considerably separated from them and from each other, excepting that the first and second lower bicuspids are in contact. The third molars have not yet been erupted, and the case here presents evidence of considerable loss of masticating capability; but an inquiry made at the time in regard to this drew out no admission that the young lady recognised such loss. The patient and family were pleased with the result; appearances had been improved, but the loss of masticating power was obvious although not recognised.

Another model presents the same mouth at the present time, eleven years after the extractions. The third molars are fully developed, and all the spaces anterior to it—which were so evident in the former condition—are obliterated. The case now presents a nearly perfect articulation, both from the external and internal aspect. The only blemish discoverable is on the lingual view of the right side, where the very slight tipping of both the upper and lower second molars causes the anterior cusps to be separated a little; and this is practically of no consequence. It will be evident, I think, that the favourable results here shown, when compared with the condition, were dependent on the development of the third molars. There has been sufficient force exerted by them to move the second molars, the second bicuspids, and even slightly the first bicuspids, so as to effect the closing of all the spaces between these teeth and produce a practically perfect result, upon the posterior as well as the incisor and cuspid teeth. These results in this case show that Dr. Davenport's generalization,* "never after the eruption of the second molars can extraction of first molars be considered other than a misfortune," needs qualification. The second molars were here fully erupted, and in perfect occlusion with their antagonists, before extraction of the first molars, and it will be remembered that this is the condition claimed by Dr. J. T. Codman, in the discussion of this subject, to be most favourable to prevent tipping of the second molars. I am not prepared to advocate any rule on this point, however; the results are merely presented, and your attention is called to the fact that the bite in this case, as well as in the one previously shown, has not been perceptibly shortened, and that a "forward projection of the arches, and the production of a deformity worse than the one sought to be corrected," has not resulted, but on the contrary the anterior teeth have fallen back as was anticipated.

Dr. Davenport calls attention almost exclusively to mechanical or muscular force, and its effect on the teeth that remain after extractions; but physiological forces ought not to be overlooked.

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* Dental Cosmos, July 1887, p. 429.

Of the latter, the most important is that exerted in the development of the "wisdom-teeth." In this case, the slight increase of forward projection of the upper incisors is not caused by shortening of the bite,—there was no shortening,—but by the force of the third molar driving all the teeth in front of it further forward, so that at present the lower incisors do not touch the upper teeth. The same agency is perhaps more clearly and certainly discerned, in the forward movement of all the teeth posterior to the cuspids, so as to close up all spaces, as has been shown. I am confident, also, it must have been a matter of common observation that when wisdom teeth develop behind full arches, the anterior force exerted in their development will frequently—almost certainly—cause an increase of any irregularity that may exist among the anterior teeth, and sometimes cause some irregularity when none existed previously.

This same influence is shown in one of Dr. Davenport's illustrations.* See Fig 13, J. M, and N, the left side of a mouth from which the first molars had been removed at nine years of age. Here the development of the third molar was one reason—if not the only one—why the front teeth are crowded "just the same as they were before extraction." The result can hardly have been due to shortening of the bite, for no teeth had been removed from the right side of the mouth. Other instances might be exhibited, but the point is sufficiently clear, I think, that the third molar is one of the most important factors in determining the ultimate results of extractions; and yet it is true—as Mr. Underwood of London has said—that "no other tooth is so unreliable and uncertain." If the size and period of this tooth could be depended upon, it would have much to do with determining the question of the proper time to extract teeth when such operations are considered desirable, but the fact of its uncertainty makes all the results of extractions—especially of first molars—uncertain also. After the extraction of these latter teeth, the bicuspids and the six anterior teeth tend backward, and the second molars have a like tendency to move forward to occupy the vacant space. This notable tendency I believe to be due in a great degree to another physiological influence, namely, the contraction of cicatricial tissue. If now the third molars are developed so soon after the extraction of either bicuspids or molars—to correct irregularity or undue prominence of anterior teeth—that the teeth posterior to the space are carried forward by the force of the developing teeth, and the space is thus occupied entirely from behind, all the anticipated good effect on the anterior teeth may be frustrated ; while, on the other hand, if just sufficient time has elapsed after extractions to permit the anterior teeth to move, so as to assume less prominence, or occupy enough of the space for regularity of arrangement, wisdom-teeth of normal size may carry forward the second molars, and close all spaces posterior to the cuspids, and thus conduce to the best attainable results. Or if again the wisdom-teeth are delayed in development or are merely rudimentary in size, disfiguring spaces may be effected between the incisors ; or, that drooping position of the superior cuspid may result which more than anything else produces that unfortunate expression of mouth and teeth which has been referred to in the former discussion of this subject. In my experience the second molar will be most apt to tip badly, for lack of the assisting force of the third molar behind it, to move it bodily forward at the right time, till contact with the second bicuspid has been attained.

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* Dental Cosmos, July 1887, pp. 425, 426.

It is obvious then that a very large element of uncertainty must be taken into the account in anticipating the results of any given case of extraction,—especially of first molars,—unless mechanical means are used to produce the movements desired ; and that an exact prediction of results of such procedures would be hazardous.*

Æsthetic effects often constitute a valid reason for considering the propriety of the removal of some teeth ; for crowded and irregular conditions are not uncommon, even in arches that are already as large as they should be, and disproportion or mal-adaptation of the maxillary bones to each other causes more or less perversion of occlusion. But the uncertainty attending the results—especially on account of the facts concerning the third molar—seems to present an important ground of objection to the practice of removing good first molars. In the case shown, although the anticipated results on the anterior teeth were produced and no evil worthy of mention ensued, observation and study of mouths and models, since this subject was last before us, impress upon me the fact of uncertainty and risk attendant upon the removal of the largest and most important grinders in the mouth. With an appreciation of the important influence, and at the same time of the unreliability, of the third molar, if the removal of teeth seems to be required, and the first molars are in good condition, the bicuspids ought to be considered for such sacrifice, because, while they may afford the needed space, their loss is not attended with so much risk of ill effects. Here, again, I am obliged to dissent from Dr. Davenport's conclusion, that we "hardly need to consider the results of extraction of any other than the first molars."

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* Dr. Davenport theoretically concludes that the changes are reduced to "a mathematical certainty," and that we may "safely predict" results. (DENTAL COSMOS, July, 1887, p. 432.)

Indications for the removal of teeth do exist, and the application of mechanical force to correct irregularities without extraction is not always a permanent success, when by such sacrifice it might be so. Teeth that are *crowded* in new positions of regularity almost invariably return, after a time, nearly or quite to their old malpositions, and the latter tendency is much increased where the original irregularity has been inherited.

When two or more bicuspids or molars are so wasted by decay as to make their permanent preservation doubtful or impossible, this fact may sometimes well decide a case in favour of extraction, which might better be decided against if these teeth were all in a favourable condition for long usefulness. The structure and probable longevity of teeth should, without doubt, always have weight in deciding the propriety of extractions, but there seems to me as little doubt that the sacrifice of perfect teeth is sometimes justifiable by conditions before suggested.

Such conditions did not exist in the case presented. There was no undue prominence nor irregularity of teeth to justify such a sacrifice. Nevertheless, at the time, I advised the removal of the four first molars, because the teeth were very frail in structure, with many small approximal cavities of decay. I was then infected with the idea that in such cases extraction was justifiable *merely to produce spaces*. This was in October, 1882. It is seen that spaces have ensued, but the result, although it has probably prevented decay to some extent, is far from satisfactory; the spaces are not where most needed. The girl was in her thirteenth year when the teeth were removed. The wisdom-teeth are just now making their appearance, too late to prevent or correct disfiguring gaps between the anterior teeth and the dropping downward and backward of the cuspids. The latter condition —which I believe generally results from the extraction of first molars, when the cuspids were not originally too prominent—illustrates disfiguring and unfortunate results, that have been alluded to in the discussion of this subject as a reason for never extracting these teeth.

The cast of a lady's mouth who is about thirty-five years old, shows the results on the incisors of extraction of first molars at about the age of thirteen. The lady informed me that no irregularity existed, and that the teeth were close together, probably in contact. The molars were removed by an eminent dentist of the last generation, only to make spaces. It will be observed that this has also been accomplished where least needed, is most harmful in æsthetic effect, and is much regretted by the victim.

While these two last cases show some of the evils of extractions, and illustrate original conditions that imperatively demanded the preservation of all the teeth (the last case by inference only), they serve to show the tendency, before alluded to, of the six anterior teeth to a retrograde movement, after the extraction of first molars, which may be so much desired when the mouth is disfigured by their irregularity and prominence.

In all these facts and opinions I am well aware there are insufficient data from which to formulate invariable rules, but I believe the facts represent invariable principles ; the cases presented were selected for that reason. But I desire to have this contribution regarded as suggestive, and to have the facts here presented become part of the foundation which I hope to see laid for future intelligent practice, whether my interpretation of them is or is not correct.

Opposition to the indiscriminate extraction of first molars or other teeth can be made effective, I think, only by recognizing the facts that seem to bear on both sides of the question. Dr. Davenport has shown what bad results have followed the extraction of first molars in certain cases, and it is well that certain views should sometimes be advocated with all the ability possible. But the defenders of extraction as a practice may offset his argument—as they do—by asserting that he has made up his case from the blunders of incompetents. They can in turn point to facts on their side,—such as Dr. Brackett's cases,—and claim that such results are always to be relied upon in the practice of those who know how and when to do it. And if such extremists get followers—as they will —one class will accomplish much less good than they might do, because they shut their eyes to the legitimate benefits of extraction, and the other class will be perpetuating indefinitely the evils of indiscriminate sacrifice.

Reflections from the Surgery.

SARCOMA OF UPPER JAW; OPERATED UPON FIVE TIMES IN NINETEEN MONTHS; NO RECURRNCE FOUR YEARS AFTER THE LAST OPERATION.

(In University College Hospital, under the care of Mr. Christopher Heath,

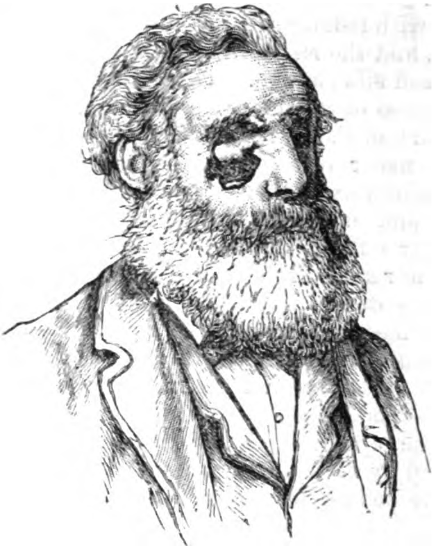
The case is one which affords considerable encouragement to the surgeon in the removal of sarcomatous growths of the upper jaw. Five operations were performed for the removal of a growth, described as a myxo-sarcoma, and for recurrences. The patient was under treatment for a period of nineteen months, and now, after four years, there has been no further evidence of the disease. Mr. Heath is therefore justified in regarding the patient as cured. A glance at the engraving will show that this has been effected with very little deformity. It is comparatively seldom that such a satisfactory result can be recorded, rapid recurrence being rightly regarded a sign of great malignancy, the recurrent growths being usually softer, more vascular, and of deeper extent. Much depends, in these cases, on the assistance given by the patient himself, who, by recourse to operation in the earliest signs of return of the disease, may hope for ultimate cure.

R. R——, a man aged fifty-three, was admitted on Oct. 2nd, 1882. There was no family predisposition to new growths. About two years before admission he received a blow from a chain on his right cheek, and in June, 1882, he noticed a swelling on his right cheek just below the eye. This swelling had steadily increased, and on admission to the hospital it was about an inch and a half broad, and extended from the nose in a direct line outwards over the malar bone, passing immediately below the eye, which it partially closed. The growth was fixed to the bone, and the skin over it, though not implicated, was stretched and red. The lymphatic glands in the neck were not enlarged.

On Oct. 4th, Mr. Heath made an incision from the zygoma along the lower margin of the orbit and the side of the nose to the upper lip, which he divided; he then reflected the healthy soft tissues, sawed through the malar bone, snipped across the nasal process of the superior maxilla, and wrenched away the growth with the upper part of the jaw. The bleeding was arrested by ligature and the actual cautery. The wound was dusted over with iodoform. The lip was adjusted with two harelip pins, and the rest of the cheek flap was sutured with silver wire and silk sutures. The parts removed consisted of the nasal process of the upper jaw with part of the nasal bone, the upper part of the antrum with the growth attached, and part of the malar bone and the pterygoid processes. The growth was circumscribed; it measured three inches in the horizontal diameter and two in the vertical; it was growing from the outer wall of the antrum, the cavity of which had not been penetrated. The growth had a faint pinkish colour and firm consistence. The microscopical appearances were those of a myxo-sarcoma. On the second day after the operation the patient's mouth was washed out with permanganate of potash lotion, and afterwards the washings were repeated three times daily. The temperature reached 100° F. on the third day after the operation, but was normal afterwards. The wound healed by first intention, and the patient convalesced rapidly. He was discharged on the sixteenth day after the operation.

The patient was re-admitted five months later (March 27th, 1883). He stated that about two months previously he noticed some fulness about his right cheek. On admission, the right lower eyelid was very œdematous, but apparently healthy. The upper margin of the remains of the malar bone and zygomatic arch and the anterior and lower third of the temporal fossa were all obscured by a firm growth. Posteriorly the growth reached to within half an inch of the external auditory meatus, above to the junction of the upper and middle thirds of the temporal fossa, and below it covered the whole of the malar region and the outer third of the upper jaw. The skin over it was healthy.

On March 29th a horizontal incision was made over the malar bone, and another at right angles to the outer end of this. The flaps were then reflected and the growth exposed; the outer wall of the orbit, the zygoma, and the malar bone were sawn through, and the growth, with the detached pieces of bone, was wrenched away. Diseased portions of the temporal muscle and the upper part of the masseter were then removed piecemeal. The lower part of the orbit was found to be diseased, so a free incision as for removal of the whole upper jaw was made, and, after sawing through the hard palate, the remains of the upper jaw, with the anterior third of the soft palate, were removed. Some masses of growth being still visible, the actual cautery was applied to them and the cavity was packed with lint smeared with Vienna paste. The cheek and lip were adjusted as in the last operation. The plugs were removed on the day after the operation, and the cavity was syringed out with Condy's fluid. It was afterwards syringed daily with a solution of chloride of zinc, and large pieces of slough were by that means removed. For eleven days after the operation the temperature ranged between 100° and 101·4°F, and then kept about normal. The patient made a good recovery, and was discharged on the twenty-fifth day after the operation. The centre of the incision over



the malar bone had not healed. The cavity inside the mouth was granulating. The right eyelids were much swollen, and there was a little discharge from the conjunctiva. The patient returned two months later, when his right eyeball was removed, as suppuration had occurred within it. He was discharged on the sixth day.

The patient was admitted again about five months later (Nov. 28th, 1883). He stated that he had noticed a return of the growth for about two months. Beneath the lower eyelid there was a hard mass about the size of a pigeon's egg; it extended from the free margin of the lid to the scar of the previous incisions beneath the eye. This mass, including the whole of the lower eyelid and the outer end of the upper eyelid, was removed with Paquelin's cautery. Plugs of wool, smeared with chloride of zinc paste, were packed into the wound. The mass removed contained some new growth, but the greater part of it was composed of dense cicatricial tissue. The patient quickly recovered from the operation, and was discharged in about ten days. He, however, returned again in five months (May 6th, 1884). and stated that he noticed a small lump on the lower edge of the wound about two months after leaving the hospital; it had since reached the size of a chestnut; it occupied the lower and outer part of the orbit. The growth was freely removed by cutting round it with the actual cautery. The patient was discharged on the ninth day after the operation.

The man came to see Mr. Heath in June, 1888 (four years after the last operation), with regard to another matter. There were no signs of recurrence, and the patient had been perfectly well since the last operation. (See engraving.) The woodcut, taken from a photograph, shows the appearance of the patient at the present time, the prominence seen in the cavity of the wound being due to a vulcanite palate fitted by Mr. S. J. Hutchinson, which enables the patient to eat and talk with perfect comfort. Ordinarily he wears a black patch over the orbit, and thus entirely conceals the deformity.

British Journal of Dental Science.

LONDON, NOVEMBER 15th, 1888.

CHLOROFORM IN THE DENTAL EXTRACTING ROOM.

In our contemporary, *The Lancet*, a wordy warfare has recently been carried on concerning the use of anæsthetics. In a leading article the editor lays it down as a law, that only ether should be administered in routine practice, and with this conclusion the majority of experts appear to agree. It is commonly acceded on the other hand that the surgery of the jaws and naso-pharynx needs chloroform, both on account of its more prolonged effect, and because it is less inflammable than ether. These rules may apply, and we believe they do to surgical practice, but they certainly need very considerable modification in the case of dentistry. As a profession, dentists see more of anæsthetic practice than falls to the lot of general practitioners in medicine, and the result of the experience that the whole dental profession has been accumulating since the year 1844 is, that nitrous oxide gas is by far the safest and best adapted anæsthetic for dental work. This being so, it may be asked, why is it necessary for the *British Journal of Dental Science* to insist upon what is a recognised truism in the profession. The necessity arises from the fact that medical men bringing patients to dentists, and especially members of their own family, are prone to suggest "a whiff of chloroform" as a desirable preliminary to the extraction. It does not concern us to inquire why medical men prefer this agent for the purposes indicated, but it certainly does deserve our most emphatic condemnation since the narcosis obtained is not more satisfactory than when safer anæsthetics are employed, and the risks incurred are in every case considerable. It has been demonstrated over and over again that an incomplete narcosis, such as for example follows the exhibition of chloroform, unless pushed to the loss of conjunctival reflex is far more likely to produce fatal results than is complete chloroformisation. As is well known, the fifth pair of nerves are in close connexion with the nerves which are instrumental in the conduct of the vital processes. Thus it is a very simple matter to account for heart failure occurring in operations affecting branches of the fifth pair. A certain amount of chloroform or any other anæsthetic would, by lessening the control usually exerted by the brain centres over the peripheral nerves, enhance the reflexes conveyed along these nerves; and there is a stage of narcosis, in which volitional movements are abolished, and reflex movements, or control of movements as the case may be, are intensified, and of all reflexes those connected with the sympathetic system, and control the movements of the heart, the circulation or contraction of the blood vessels, are especially prone to be injuriously affected in this semi-narcotic condition. Just to make this clear, let us suppose a case. An individual is to have 4 teeth extracted, and to this end chloroform is administered; as he goes under the influence of this agent, at first his ideas become vague, then he has a sort of waking dream which induces him to struggle, later volontary movement disappears, although he may feel pain he is unable to resist at this time painful sensations will be conveyed along his sensory nerves producing effects in the receiving centres of the nervous system, thence the impulse becomes reflected through, the sympathetic nerves, and the heart stops beating. Now the individual may have had enough chloroform given to him to carry him just beyond the stage when the reflexes are active, so that during the extraction of, let us say, the first two teeth, no prejudicial results occur, after this he recovers sufficiently for the reflexes to be again active, so that if any further extractions are attempted, he runs a grave risk of reflex paralysis of the heart. Hence we see the very prolongation of narcosis which its advocates vaunt for chloroform is in reality an unseen danger in its use. Laying these considerations to heart, we think dentists are fully justified in declining to extract teeth when the anæsthetist proposes to administer chloroform. If any fatality follows its use, blame will sure to be laid to the door of the dentist as well as to the chloroformist. Two further considerations certainly confirm what we have above said; the one is, that the sitting-up posture, which is one usually preferred for extraction, greatly intensifies the danger of heart failure, and the other is, that it seems open to grave question whether a wholesale removal of diseased teeth or roots at one sitting is not highly prejudicial to the patient either from shock, hæmmorrhage or the extent of mucous membrane which is thus wounded and exposed to septic absorption.

A Dental School for Guy's Hospital.—We understand that steps are likely to be immediately taken to found a dental school within the walls of Guy's Hospital, which will supply all the necessary lectures and practice in stopping, at present only to be obtained at a special dental hospital. In order to render it complete some new buildings and a considerable increase in the dental staff will be required, but it is probable that Mr. Newland Pedley's scheme for bringing his speciality again more closely in contact with its parent profession will be adopted at Guy's Hospital. This may lead to a very considerable change in the view taken of the speciality by the body of the medical profession; for whilst the latter is generally regarded as overstocked, Mr. Pedley attempts to show that the number of qualified dentists is rapidly decreasing, and that the existing special hospitals could not possibly meet the future demand. But in recommending the governors favourably to consider the proposal of founding a complete dental school in Guy's Hospital, the medical staff have laid stress on the fact that the poor in the east of London must suffer extraction for a decayed tooth or go away unrelieved, since neither here nor at any of the general hospitals has a dental staff been provided sufficient to cope with the demand for fillings. It will undoubtedly prove a great boon to the poor if a number of new centres for teaching the higher branches of dentistry be established, where, as in the case of midwifery or surgical dressings, it is not doubtful that there will be found plenty of students ready to carry out the treatment of individuals under the supervision of their teachers.

CONGENITAL ABSENCE OF INCISORS.—A French contemporary describes a curious vagary which has been perpetuated through five generations, it is the complete absence of left lower incisors.

CENSURE OF THE AMERICAN ADVERTISING DENTISTS CURTIS, GERRY AND VEO.—We are asked to give publicity to the following:—At the last meeting of the Harvard Dental Alumni Association held in this city, the following action was taken regarding advertising by some of its members. Voted: That the Harvard Dental Alumni Association discountenance any connection of its members with any advertising dental establishment; and whereas evidence has been presented that Drs. Curtis, Gerry, and Veo have become so connected with a dental office in London, they are hereby suspended, in this Association until they have discontinued their connection with such establishment.

A GOOD AND HARMLESS TOOTH POWDER.—Mr. Sewill writing upon the subject of how much harm may be done by the incautious use of dentifrices, recommends the following: Fresh white soap powder, ʒij., boric acid, ʒij., powdered orriss, ʒss. precipitated chalk, ℥iss, oil of cloves, 10 drops. To this there may be added for fastidious patients ten drops of oil of lavender and five of attar of roses, or any similar perfumes. Where the health is disordered and the mouth vitiated, there may be added instead of perfume, ten drops of carbolic acid and ten of eucalyptus oil to each ounce of powder. If patients with delicate teeth would employ freely a tooth powder of this kind night and morning, taking pains to remove all adherent shreds of food from between the teeth, there would be, he thinks, considerably less work for dental surgeons.

ELECTRICITY IN EXTRACTING.—An American contemporary contains the following amusing episode. In the year 1862 Capt. F. returned home on a furlough from the army, and on his way passed through Washington. He came to my office to have a large molar extracted. He said, "Do you use electricity in extracting teeth? It is a big thing around Washington." I answered in the affirmative, and showed him my battery and the appliances, and he sat down in the operating chair with great satisfaction. My assistant being out for the moment, I asked my wife, who was present, if she would assist me by pushing the plunger in the battery when I gave the signal "now." She being very timid about seeing operations of the kind, at first refused but finally consented. The forceps was placed on the tooth and the signal "now" was given for the current to be sent through the electrodes, and I lifted out the tooth. The captain clapped his hands together and said, "By George, that is glorious; it didn't hurt a bit; it's a big thing! Capital! Capital!" Just then I turned around and got a glimpse of my wife, who stood as pale as death, with a finger in each ear. She had not heard the signal "now" and consequently there was no circuit of electricity made, but it was all the same to the captain, who *thought* he was not hurt, and so, according to a modern doctrine, *was not hurt;* but the extracting of such teeth as the Captain's, does hurt some people.

ANNUAL DINNER OF THE PAST AND PRESENT STUDENTS OF THE LONDON DENTAL HOSPITAL.—The Annual Dinner of the staff of the past and present students of the Dental

Hospital of London will be held on Saturday, December 1st, at the Holborn Restaurant, when the chair will be taken by JAMES SMITH TURNER, Esq. Gentlemen either now or formerly connected with the Hospital or Medical School, who may through inadverture not have received special notice, and who desire to be present, are requested to communicate with the Dean at the Hospital.

DINNER OF THE PAST AND PRESENT STUDENTS OF THE LONDON DENTAL HOSPITAL.—The fact that Mr. James Smith Turner will take the chair at this year's dinner lends an especial interest to the occasion. Few men have done more than he to push into prominence, and keep in the fore-front of active life the British Dental Association, nay more, Mr. Smith Turner, has we are assured worked for a higher end—the progress of the Dental profession. Many admire, many disagree with Mr. Smith Turner's *Aut Cæsar aut nullus* views where is Cæsar the B. D. A., and nullus is—well what the mathematicians would call "half zero,"—but all respect him. We hope past and present students will flock round and support one who has given up so much of his time, energy and work for their interests. Of Mr. Smith Turner it may well be said, few are so good a friend as he can be, none can be a better enemy, since he be friend or foe, he will act straight and honestly, fearlessly, but justly.

TOXIC EFFECTS OF COCAINE.--Dr. Daniel Mowat, writing to the *Lancet* gives another case of dangerous symptoms following the use of cocaine. G. M—, aged twenty-nine, a tall, strong-looking man, had a small rodent ulcer below and to the outer side of the left lower eyelid. I removed the ulcer by two elliptical incisions, using cocaine as the anæsthetic. Three and a half minims of a 20 per cent. solution were injected hypodermically in two different places. The operation, which was absolutely painless, only lasted about two minutes, but the patient during the stitching of the wound began to show signs of faintness, followed by some alarming symptoms; extreme pallor, yawning, gasping for breath, and frequent sighing, succeeded by rigidity and coldness of the extremities. The hands were firmly clasped above the head, and could be separated only with great difficulty. His face was blue and pinched, the pupils were semidilated and inactive to light, and the pulse was feeble and rapid For a little while the patient was incapable of answering the simplest question put to him. The muscles became relaxed, and the patellar reflex was found to be increased; there was no ankle clonus. On regaining his power of speech he said he felt he was dying, and asked to see his wife. The aromatic spirit of ammonia was freely administered to him, and he began to recover. His pulse became full and rapid, 120 per minute. Clonic spasms seized him several times afterwards, each attack being weaker than the preceding one. A few minutes after the cessation of these spasms he presented all the symptoms usually seen in a person suffering from the effects of alcohol. On his recovery he said he did not remember anything of the operation, but felt giddy.

ANTISEPTIC ACTION OF CARBO-NAPHOLIC ACID.—This acid is obtained by the simultaneous action of sodium and carbonic acid on naphthol. It is one of the aromatic group of organic compounds, being related to salicylic acid. Its antiseptic action has recently been investigated. It is almost insoluble in alcohol and ether, and partly in borax and sodium phosphatic solutions, in both of which media it may be used. Its greatest antiseptic action is produced by applying the acid itself. It was found by Ellenberger and Hofmeister to delay the growth of putrefactive bacilli when used in the dilution of 1 to 20,000, to kill the organisms in the dilution of 1 to 1,200. Advanced decomposition is stopped by using the acid in 1 to 300; it is thus more powerfully antiseptic than carbolic or salicylic acid. The acid is a poison to animals (dogs, rabbits, sheep), but only in large doses. It is excreted as a salt unaltered in the urine, and when diluted does not hinder digestion. These experiments add another to the long list of antiseptics already known, though, owing to its toxic properties, its use in practical medicine cannot be an extended one. It possesses decidedly less advantages than creolin, the action of which has also been recently investigated.

SACCHARIN AS A SUBSTITUTE FOR SUGAR.—We have on several occasions drawn attention to the claims Saccharin has been supposed to possess as a factor in everyday diet. The following report is therefore of no small importance, and deserves careful consideration. The report by a Medical Commission appointed by the Minister of Commerce to examine into the properties and effects of saccharin as a food expresses the opinion that materials which are antiseptic or capable of fermentation should be borne in mind, the report continues, that a substance in the economy all the series of changes which render it assimilable. Not only is saccharin not a food, but by its antiseptic properties it renders entirely unalterable the substances with which it may be mixed. To substitute saccharin for sugar, therefore, is to suppress an article of food in order to replace it by an inert body; it is to check or retart the physiological actions which produce the change into sugar of the amylaceous materials; it is, in short, to expose the organism to a double deficit. The delay effected in the change of the fibrin of the albumen is not clearly shown. Hence the commission concludes that saccharin should not be introduced into food: that it is not a food and cannot replace sugar; that its use, or that of its preparations, seriously disturbs the digestive functions and increases the affections known under the name of dyspepsia, and that it should be prohibited as an article of food. It is said that the Portuguese Government has prohibited the introduction of saccharin into that country.

Death of Dr. Lavies.—The dental as well as the medical profession will deplore the death of Dr. Lavies. In spite of the calls of professional life he was always ready to help by getting up or assisting in musical entertainments, and was a host in himself. Those who like ourselves had the privilege of knowing Dr. Lavies when his voice was in its prime will recall the peculiar sweetness and sympathetic character it possessed. His constant geniality, kindness of heart and liberality made Dr. Lavies one of the most popular of amateur musicians, welcomed everywhere and everywhere welcome.

Smoking Concert of the Students of the Athletic Club of the London Dental Hospital. A very successful evening was spent on Tuesday, Oct. 9th, when Mr. David Hepburn filled the presidential chair. Some excellent music was performed, Mr. Capper showed himself an accomplished and accurate "siffleur," his whistling being really very good. Mr. Egerton Hills sang with great effect. The duet "Excelsior" may be selected as of conspicuous merit, while it is superfluous to add that the chairman, Mr. Hepburn convulsed the "house" when he was merry as in his very humourous recitation, and delighted it when he sang. An appropriate close was the enthusiastic singing of "Auld Lang Syne." Several members of the Staff were present.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

TRY AGAIN.

By S. B. Palmer, M.D.S., Syracuse.

This paper has reference to teeth that have undergone repeated treatment, and whose further preservation by filling seems hopeless. Cavities formed on the labial surfaces near the gum are difficult to treat successfully. They have been satisfactorily treated by the following operation :—Prepare cavity in form case demands avoiding sharp angles. 2. Cut from plate of pure gold a piece a little larger than the cavity, bend to shape, and grind to fit, with corundum wheels grind on a bevel like a screw head—the inner surface being the smaller." Roughen inner surface with sharp graver and set in oxyphos-plate. Such fillings look well after years of wear, and decay is unknown to them. To keep firm gold plates covering large cavities in shape of spiral spring, a thread of gold and platinum is soldered to the plate. Large amalgam fillings may be covered by the process. Another operation that has been successful, consists in the reinsertion of gold fillings. In the first case a superior central articulating edge to edge with lowers was filled, but in time loosened from wear of dental tissues. The cavity was excavated and the plug reinserted, set in phosphate. This process has had to be repeated once in eight years. 2nd Case.—A superior incisior had lost a large contour filling which on replacing was found to accurately fit the cavity. It was therefore cemented in. After a time the thin corner of the filling broke off, spoiling the look of it. The filling was removed whole, and the corner built up with solder, it was then reinserted with oxyphosphate. The application of a filling as a remedy requires discrimination similar to that of the physician in the exhibition of his remedies. Gold in 70 or 80 per cent of teeth that are filled is the filling needed, but the remainder require other treatment in order to secure success. The fact, for instance, that in the incisors of a child of 8 or 10, cavities exist, is the proof that the teeth are not sufficiently calcified to warrant preservation with gold. The poorly calcified teeth of the young are highly organised, and gold in contact produces inflammation sufficient to destroy the vitality of the dentine. This is done by thermal shocks. The importance of diagnosis—A patient had sought medical treatment for a pain in the angle of the jaw, the difficulty continued till the muscles on the right side became rigid. On examination in the third inferior molar was found a filling on the posterior surface and (*b*) also a large crown filling. The latter was of a bright colour as if recently inserted. The tooth was slightly sensitive to heat and cold. The crown filling was removed, and there was evidence of leakage. There was no discolouration and but slight decalcification. The cavity after a short time was lined with chloropercha and again filled with amalgam. The cavity was shallow, but probably had it been lined, or copper amalgam been used, there had been no trouble. The other case was that of third upper molar filled with amalgam on the approximal surface, the posterior surface of the second molar already had been filled with amalgam. The former filling was contoured. Soon there was pain and the gums between the teeth, and around the wisdom tooth became inflamed. The gums even suppurated. The cause was supposed to be galvanic action between the two fillings, the thorough separation of the fillings produced a cure.

OUTLINE OF A COURSE OF STUDY IN OPERATIVE DENTAL TECHNICS.

By G. V. Black, M.D., D.D.S.

It is proposed to found a new department of preparatory study which shall include all dental operations as near as may be, which shall be done out of the mouth. To this the term Operative Technics is limited. This department is to be established in order that the student may before commencing the dental operations in the mouth become thoroughly conversant with teeth—the nature and qualities and of the instruments and materials they are to use. This, it is proposed to do in a series of object lessons. Anatomy of the Teeth.—An examination of the general and particular anatomy of teeth. The consistence and physical qualities of enamel dentine, with especial reference to the clearage of enamel. The form of particular description of special characteristics and classification of particular teeth. All this requires invention on the part of the teacher, but the benefit of this method of teaching to the student will be considerable.

THE PULP CHAMBER.—The study of the forms of pulp-chambers and root canals will be carried on firstly by simply splitting open the teeth, and subsequently cut by fairly well-fixed rules, so that the student may acquire such a thorough knowledge of the subject as to enable time to striko accurately such part of the pulp-chamber he may desire and understand the relations of the cavity to the cut. Incisors and cuspids should be cut in three directions as follows :

1. Lengthwise –Labiopalatal
2. do. mesio-distal.
3. Crosswise in nearly all parts of crown and root.

When ground, the student should be required to tako silhouette prints. Bicuspids and molars should first cut across beginning on the cusps or grinding surface and continuing until the horns of the pulp appear. The student will observe the difference in the location of these with reference to the grinding surface in long and short cuspid, thick necked teeth, etc. Prints should be made from the time the horns appear, until bifurcation of roots prevents further progress. The roots should also be ground beginning at the apices. The position the broach would hold to the face in passing into the several roots should be shown. Lengthwise cutting should also be done. This is of especial value as showing the thickness of dentine at various parts where caries occur.

EXCAVATING.—Fresh teeth should if possible be provided for the class. In teaching excavating as in other subjects rules must be adopted, otherwise the teaching will fail to impress the student from its want of fixedness and force. Which parts of cavities to be first cut, how and by what instruments and the order of procedure that will give best results should be systematically taught.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

THE BALL-BEARING READY ENGINE.

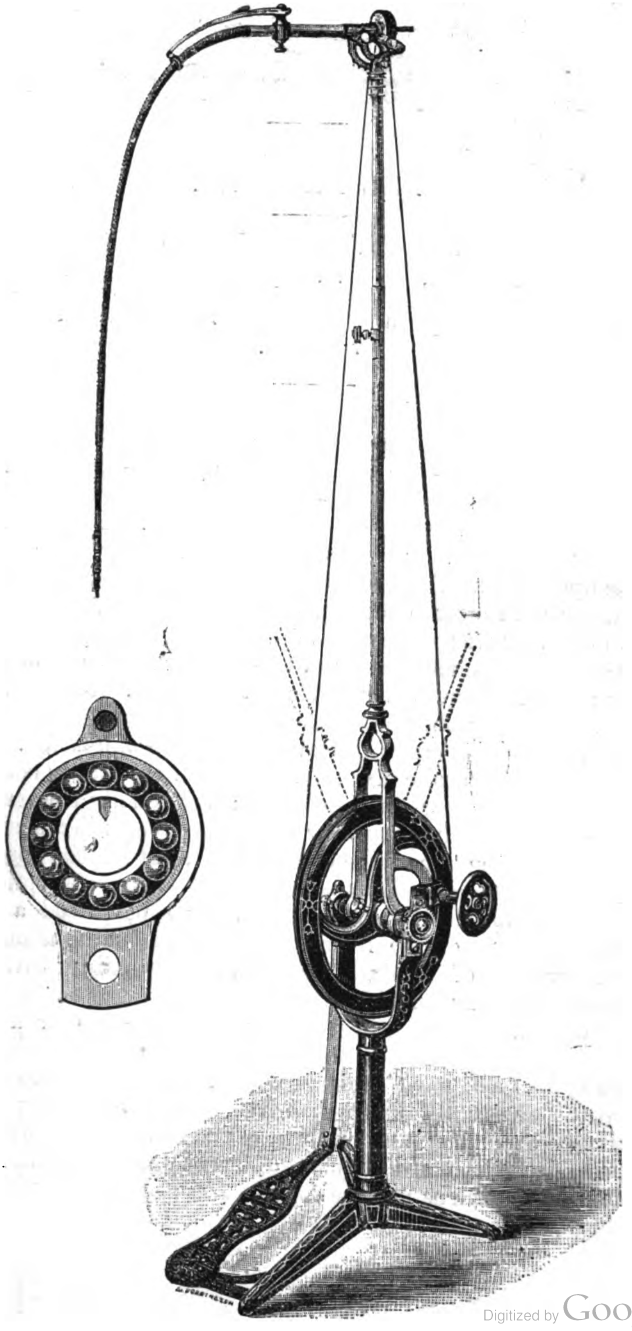
FRANCIS LEPPER.

The application of ball-bearings to the dental engine, is undoubtedly a fortunate and valuable improvement.

To cyclists the advantage of ball-bearings have long been known, and it is somewhat surprising that the same principle had not before been applied to the dental engine, where smooth and easy running is the great desideratum.

The new bearing applied only to the driving-wheel, and scarcely needs special description, our readers generally being already acquainted with this new method of avoiding friction.

A new arrangement has been added, by which the upright of the engine can be pulled backward or forward, and there remain until it is desired to alter its position. The small wheel shown in the figure controls this movement, but it has the disadvantage of imparting a cumbersome and somewhat clumsy appearance to the whole machine. This, however, is a defect which can be readily removed.



THE BALL BEARING READY ENGINE. (See page 1058.)

Literary Notices and Selections.

THE DECIDUOUS TEETH: THEIR ERUPTION AND REMOVAL.

By C. N. Peirce, D.D.S.,

Professor of Dental Physiology, Dental Pathology, and Operative Dentistry in Pennsylvania College of Dental Surgery.

Concluded from page 1013.)

In the effort to tabulate this interesitng and obscure physiological process,—the decalcification or absorption of the roots of the deciduous teeth,—it is difficult to do more than approximate the time at which it takes place. The period at which it begins, as well as the several progressive points indicated by the figures expressing years of age, though probably not accurate to the month, are yet sufficiently correct to warn the dentist of the need of great care in the application of arsenic for the devitalization of the pulp and in the subsequent treatment of the pulp-chamber and root canal. This process, beginning first in the roots of the incisors, progresses gradually when it is to be completely and normally accomplished, from near or at the apical end of the root toward the crown, occupying about three years in dissolution ; and usually releases the crown of the deciduous incisor between the seventh and eighth years, the absorption of the centrals' roots ordinarily preceding those of the laterals by some months. The absorption of the roots of the first deciduous molars may be placed a year later than those of the lateral incisors, beginning about the middle or close of the sixth year, and terminating with the removal of the first deciduous molars, about the tenth year, the second molars following usually some months or a year later. The cuspids, not infrequentlv the last of the deciduous teeth to be shed, have their period of absorption extending from the eighth to the twelfth year. While these periods mark the absorption and removal of the teeth in the average mouth, so variable are they in different families that many wide differentiations may be found.

Charles S. Tomes,* in speaking of root-absorption, says: "It was a matter first accurately investigated by my father. The root, at or near to its end, becomes excavated by shallow, cup-shaped depressions; these deepen, coalesce, and thus gradually the whole is eaten away. Although absorption usually commences on that side of the root which is nearest to the successional tooth, it by no means invariably does so; it may be, and often is, attacked on the opposite side, and in many places at once.

"The cementum is usually attacked first, but eventually dentine, and even enamel, comes to be scooped out and removed by an extension of the process. That part of the dentine, however, which immediately surrounds the pulp appears to have more powers of resistance than any other part of the tooth, and thus often persists for a time as a sort of hollow column."

That the absorption of the temporary teeth is absolutely independent of pressure is evidently the conviction of Mr. C. S. Tomes; in which the writer fully concurs, though he would take issue with the statement that a successful absorption may begin on other localities than the apical end of the root, and go on to completion.

The absorptive process, though a physiological one, is certainly somewhat obscure, and in contradistinction to the evolution of the tooth may be termed its dissolution.

The evidence of its being the result of a physiological action is in the fact that it matters not from how many centres it has commenced, it must, to be succesful, involve in its early stages the root-canal and pulp therein, the latter maintaining vitality until the completion of the process, as the very moment vitality of the pulp ceases, that instant this retrograde metamorphosis designated "physiological absorption" terminates.

What induces this molecular dissolution it is difficult to state, though the several conditions which are always present and essential are readily recognized, but the part each plays is not easily ascertained. The place of its commencement, at the end of the root, the retention of pulp-vitality, and the presence of a vascular papilla in close proximity to the absorbing surface, with the fact that the surface of this papilla is rich in giant-cells, termed "osteoclasts," are evidently essential accompaniments, and the absence of any one of them would certainly militate against the completion of the process.

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*Dental Anatomy, p. 195.

The statement that the presence and pressure of the permanent tooth are essential cannot be sustained, as frequently the decalcification of the deciduous tooth is successfully accomplished in the absence of its successor. Again, we often find the permanent tooth impacted against or within the bifurcated roots of the deciduous molar, or pressing down by the side of its single-rooted predecessor, both being more or less displaced by the persistence cf bhe unabsorbed deciduous roots. That the organ has served its purpose, and the nourishment which had previously been appropriated by it is diverted or relegated to its successor, are probably important factors contributing to the success of this interesting physiological process.

This demonstration of dissolution is not alone confined to the roots of the teeth. The rami of the inferior maxillary give evidence of a similar phenomenon by absorption from their anterior borders, with corresponding growth of the interstitial tissue, giving development and prominence to their posterior lines.

There are also bone-cased cavities and canals, increasing in diameter and capacity by absorption from within and addition to the surrounding walls. These, we conclude, are the results of similar physiological efforts.

In considering the absorption of the roots of deciduous teeth, we must not overlook the difference between what has just been designated a physiological process, dependent upon the vitality of the absorbing structures and its contiguous tissues, and the pathological one, which is the result of a suppurative process following the devitalization of some of the same structures. In the former case, as above stated, when successful, the absorption begins at the apical end of the root, and removes the tissue by a gradual encroachment toward the crown, the interior of the root yielding to the solvent most readily, so that there is constantly maintained an inverted cup-shaped cavity into which protrudes the above-described vascular papilla, the active organ in this retrograde metamorphosis. On the other hand, when the pulp is devitalized and an alveolar abscess is established at the apex of the root, a very different condition is presented. Through the influence of the pus in which the root is constantly bathed it presents a peculiar worm-eaten appearance, the shallow grooves oftentimes encircling the root, and presenting several more or less broken, ring-like excavations, varying in depth and wholly unlike in progress and completeness of result that which we have described as being physiological and occurring in the vital root, the devitalized root never in the writer's experience being wholly removed by the pathological process.

We have thus described the influence of what we have been pleased to designate normal and abnormal or physiological and pathological absorption upon the roots of the deciduous teeth.

These same absorptive processes have not been without their influence upon the permanent teeth ; but when acting upon these structures much more frequently do they assume an abnormal type. In the large majority of cases disease has been the exciting cause ; hence root-disintegration of the permanent tooth would in such cases be pathological. So dissimilar are the two processes, both as regards the progress and the appearance they present, that one would hardly hesitate for a moment in designating that process affecting the devitalized permanent teeth as pathological, in contradistinction to the one removing the deciduous teeth, which we have styled physiological.

The exciting causes which stimulate in the vital permanent teeth the abnormality under consideration may be classed as largely mechanical,—*i. e.*, injuries, such as partial dislodgment and replacement, malposition of the affected or the adjoining tooth, and a crowded condition of the arch.

It is rarely—indeed, it might be safe to say it is never—possible for a tooth to be dislodged from its socket and replaced, or another tooth inserted in its stead, without there being a persistent effort to reduce to its embryonal condition the bordering-line of one or both tissues which have been disturbed. If this effort is properly sustained by systemic nutritional wealth, the harmonious readjustment of the tissues to each other does not result in much sacrifice of structure ; but with feeble recuperative power, deficiency in quality and quantity of pabulum appropriated, and hence in quality and quantity of blood, permanent deficiency of tissue must result. Of all the teeth inserted or reinserted with which the writer has been familiar, a final loss of the tooth by root-absorption could be traced to systemic peculiarities and defective manipulation as important factors inducing the result. That the most exquisite technical skill cannot insure success without regard to temperamental and nutritional qualities, goes without saying.—*Dental Cosmos.*

THE RATIONALE OF THE CONSTRUCTION OF ARTIFICIAL CROWNS FOR THE ROOTS OF NATURAL TEETH.

By Dr. J. J. R. Patrick, Beleville, Ill.

(Read before the Joint Meeting of the American Dental Association and Southern Dental Association, Louisville, Ky., August, 1888.)

It is generally conceded by well-informed members of our profession, that all roots of natural teeth that are in a healthy condition are available as substructures for artificial crowns; but the construction of artificial crowns and their adjustment to the natural roots of teeth are not, in my opinion, sufficiently understood. I will, therefore, ask your attention while I present a few principles that are involved, which, if not recognized, must result in defective work.

In order to secure the best results in attaching an artificial crown to the root of a tooth, a gold band encircling the root of the tooth, and passing between it and the gum, is the first step in the process, after the root is prepared. Success will depend on the nice adjustment and close fit of this band to the tooth-root; for I maintain that a band of gold fitted to the root of the tooth to be crowned is indispensable, and the first requirement in constructing an artificial crown.

The difficulty in fitting a band to the root of a tooth consists in the fact that it makes no difference what tooth-root you are preparing for a band, you are dealing with the base of a cone, and the farther you go down from the base with the band the poorer the fit. The reason I mention this is, because I have seen so many crowns put on by very good practitioners which had to be removed, and when removed exposed the defect I have mentioned. The portion of the tooth which you have to deal with is the thicker end, and you have to drive your band over it; and the farther you go down, as I have said, no matter how beautifully the work is finished, the poorer and weaker it will be, for the reason that the band will stand out from the tooth more or less, in proportion to the distance it is driven on, leaving a space between the root and the band, excepting at the actual line of contact.

All roots of teeth have canals, or a canal. The canal follows the external form of the root. There has been much importance attached to posts as a means of stability for the attachment of crowns, but unless a post taper in conformity with the canal of the root, it is an element of weakness. If you use a post that is not tapering the canal must be enlarged to suit the post, and whether the post is threaded or plain the result will be the same, weakening the point of attachment, and the farther such posts enter the root-canals the weaker the attachment becomes.

If a smooth tapering post be used, either square or round in form, previously fastened to the crown, either soldered or baked in the crown, the fixed point of the post becomes an element of weakness; for the crown and post become a lever to drag the tapering end of the post from the canal. Now, a tooth-crown with a post permanently attached could not be used in connection with a gold or platinum band to embrace accurately the periphery of the root, for of necessity it would have to go on straight.

If, however, a post can be used to advantage (which is seldom the case), two fixed points would be preferable, but, unfortunately, impracticable; one, however, can be obtained, and that one is in the end of the post that enters the root. The post, when one *is* used, should be a conical screw, the screw end a little larger than the natural root-canal, the blunt end split and slightly spread apart so as to take hold of the cement in the artificial crown. A porcelain tooth with a pin, or post, baked in the body, can never be ground to fit the end of the root presented. Of necessity the root-canal must be enlarged in order to procure space and as little surface-contact as possible, the intervening space filled in with plastic material,—*the natural substructure weakened to accomodate the superstructure.*

All the roots of teeth in the human mouth cannot be utilized for post anchorage. Such as may be used under ordinary circumstances with safety may be enumerated as follows:

The superior incisors, cuspids, palatal roots of the first and second molars, and, if great care be exercised and delicate posts used, the palatal canals of each of the bicuspids. Thus we have fourteen root-canals out of twenty-six enumerated, that may be utilized for post anchorage, if a canal post be used. Now it will be observed that there are the same number of root-canals in the corresponding teeth of the lower jaw that have but one canal in each tooth-root, the upper ones, two;

and the incisors of the lower jaw have two canals each, whereas the upper incisors have but one each.

Where a root-canal is small, as in the incisors, a conical post without a screw point would be useless, as the canals do not admit of enlargement sufficient to receive the quantity of cement necessary to secure it in place; whereas a conical screw point does not require the assistance of cement to keep it in place, and it is constructed and selected with reference to the size of the canal in each root of each tooth, so that the twenty-six root-canals of the teeth of each maxilla can be provided, when necessary, with a conical screw post, without enlarging the natural canal, which cannot be done with any other form of post.

The use of a post in a natural root to give stability to an artificial crown is by no means necessary in the greatest number of cases, and while its use is sometimes indispensable to success, nevertheless, I consider the band that surrounds the root a more important factor of stability, when properly adjusted. When we reflect that there is not a root of a tooth in the human mouth but presents the base of a cone to the operator, and that this base has an under-cut around it, it becomes an easy matter to bevel one-half of the base, leaving the other half under-cut: then bend a ribbon of gold in the form of a hoop, approximating the size of the root, with its end bent at right angles from its circumference, and slip it down between the gum and the root, a little below the beveled portion, then, with a pair of parallel pliers, seize the free bent ends of the hoop and pinch them together, remove the hoop, or band, cut, slightly lap and solder. The band thus made, after the joint is made smooth, is again put on the root by first pushing one portion of its edge under the under-cut and forcing it over the beveled side with a foot plugging instrument, assisted by a few sharp taps with the hammer. If the band is the right size, it will tuck in under the bevel, if not forced down too far. *The band must just pass the lower end of the bevel and no more.*

The band being in place, the next step will be to adjust the grinding-surface of the crown to the occluding tooth. If there is plenty of room, the crown may be telescoped over, or inside of, the band but usually it is placed in simple contact or flush on the band. The operation of adjusting the occlusion is accomplished by putting the crown in place on the band, when, the jaws of the patient being brought together, the opposing tooth will indicate on the metal crown the depressions or projections necessary to be made. The alterations on the engaging face of the crown are produced by the use of adapting pliers, made expressly to give the proper surface projections and indentations.. The occlusion perfected, the crown is then removed from the mouth of the patient and the cusps filled solid with solder. The band is then lifted from the bevelled side of the root, soldered to the crown, and finished.

It will be observed that the counterpart of the opposing tooth can be obtained upon the artificial metallic crown, without reducing the thickness of the metal by subsequent grinding. The time and endurance of the patient are saved, and a needless waste of material avoided.

In setting the crown on the root permanently, it will be observed that when the band was forced upon the root it was adapted to the root contour by stretching, and when removed to be soldered to the crown it was again slightly stretched. This can be shown by the ease with which it can be put on and taken off a second time. So in order to have the band fit the root as tightly and as perfectly as it did in the first instance, it must be reduced slightly in size by shrinking, and this is done by the use of a shrinking die. The crown now being ready for adjustment is filled with cement in sufficient quantity and carried to the root, the band portion of the crown pressed close under the under-cut, and then pressed to and over the beveled side of the root, stretching it as before, when the excess of cement will be forced out, and at the same time carry with it all air-bubbles that otherwise would remain if the crown were put on squarely.

It may be asked how a crown provided with a band could be put in place if the root had been previously provided with a conical screw post. To which I will reply: If it is a gold crown, a post can be used that will extend above the root one-third the depth of the hollow crown, which will be found sufficient, for nothing would be gained in anchorage by extending it farther. In such cases the crown would be brought squarely down on the post, then tilted over to the under-cut side of the root, and again pressed over to the bevelled side, and pressed home. As a rule, the most pronounced undercuts of the posterior teeth are found on their anterior and posterior surfaces, and on the cuspids and incisors that bulbous portion at the site of the termination of the enamel on the posterior or palatal surfaces, and these are the points to take advantage of.

In putting crowns on the superior anterior teeth, the bands should be pressed below the bulbs and carried forward to the front, or labial sides. When so inserted, the pressure on these teeth in mastication can never disturb them. It will be observed that when a band is pressed close to the under-cut and held firmly in place, making it a centre for the movement of the band, the point becomes the vertex of a radius which the band represents; and when brought down over the termination of the bevel, describes an arc, the angle of which in most cases would be about thirteen degrees. Now if the lower portion of the band is made to impinge the bevel side a little above its termination so that a degree of force will be necessary to carry it over, the band will stretch, and in stretching its lateral portions will be constricted and adapted to the lateral under-cut margins of the root. From the fact that the band is made to describe an arc when being adjusted, it is clear that as it passes over the bevel it draws nearer to the tapering root, whereby a closer fit is secured than can be made in any other manner.

The posterior and anterior contour of the cervical portions of the inferior incisors are about equal, the lingual side of the cuspids similar to the upper, but the pressure on these teeth being inward, they receive additional strength from lateral pressure. A little practice with bands on the natural roots of teeth out of the mouth, observing the points I have indicated, will convince any one of the correctness of these statements.

I have stated that it was seldom necessary to use a post of any kind when a band encircles the root properly, and it is with this view that I have constructed a porcelain tooth crown with a platinum base, or band, encircling the cervical margin, baked into the body of the tooth. The tooth is without pins in the ordinary sense, and admits of the surfaces and margins being made in the true form of a natural one.

The advantages these teeth possess over others may be stated briefly. 1st. They can be attached to the band that encircles the tooth in one soldering. 2d. Moisture is effectually excluded from the cement. 3. They can be ground down without fear of exposing pins. 4th. They are stronger, from the fact that the point of attachment encircles the whole tooth at its cervical border, or margin. 5th. They can be soldered together at their lateral margins, a quality which renders them useful for bridge-work. 6th. All crowns of teeth in the human mouth where bands can be used can be re-constructed by their employment, including the inferior incisors, which is almost impossible with any other form of porcelain tooth. 7th. They can be soldered to the band at any inclination, as the base of the tooth resting inside or on the band can be rotated like a ball in a socket.

Porcelain crowns for the posterior teeth are made in the same manner. A molar tooth can be placed on the band at the inclination desired to occlude with the opposing tooth, the metal base marked with a sharp instrument, the band and crown removed, the crown imbedded and the band adjusted and soldered to the base of the crown at the inside of the band, and then the crown is ready for insertion.

There are many teeth which can be treated successfully with gold crowns or caps, in which the band, which is indispensable in the process of re-constructing a crown on the root of a tooth, is dispensed with. I refer to the molar teeth of young persons, in which the enamel of the grinding-surface is defective,—granular, full of pits, and pin-point spots of decay. Usually such teeth are superficially decayed at the anterior and posterior surfaces, but not far enough advanced to expose the pulp in removing the defective parts. If the posterior and anterior surfaces are trimmed at right angles with the grinding-surface and the prominent portions of the surface removed, a gold cap or crown can be made to cover the defective parts, and if properly made and adjusted will be superior to any gold filling, however well performed. In the accomplishment of such work less preparation of the tooth is necessary, more of the tooth-substance is saved, and consequently, the patient is relieved from a long and tedious nervous strain in the operation, for the crown or cap is made in the laboratory in a few minutes, and when the process is understood, it takes but a few minutes more to adjust it in the patient's mouth. [Here a natural tooth was shown, the crown covered, as described, with a gold cap.]

I am very well aware that gold crowns can be made and attached to the roots of teeth, after a fashion, and to answer a purpose. I am also aware that porcelain crowns are manufactured and used, with a total disregard of the living parts to which they are designed to be attached. Very clever and ingenious men, with commendable industry, do produce gold crowns, made up of solder, shreds, and patches, whose estimate of the value of their own productions is based on the amount of labour expended on the work with the fewest number of tools, rather than on symmetry of construction with the smallest expenditure of labour and the least amount of solder.

A gold crown should be made of one piece of metal, and when formed should be of uniform thickness throughout. This cannot be accomplished by driving a flat piece of metal, from which the crown is to be made, into lead with a hard die, or driving the metal into a hard die with lead. In either case the metal plate becomes of unequal thickness, the margin of the grinding-surface becomes thin, and the sides are thrown into unequal folds; these folds when beaten down cause the sides to become thick in places. If the folds are cut out and the opposing parts brought together and soldered, the pliability of the metal is destroyed. I have stated that a crown made up of metal, to be of value, should go on to the root, or, if a cap, on to the crown of a tooth, with a stretch, in order to adapt it to unequal surfaces. It will, therefore, be conceded that uniformity of thickness in the metal and the smallest quantity of solder compatible with strength are important factors in the accomplishment of the desired end.

(*To be Continued*).

Dental News.

DENTAL HOSPITAL OF LONDON. ATHLETIC CLUB.

The second annual general meeting of the above club was held on Wednesday, Oct. 17th, at the Hospital. Sir Edwin Saunders, the president of the Club occupying the chair; Messrs. Morton Smale and Tresson, members of the Staff also being present.

The Secretary having read the minutes of the previous meeting, the Chairman called upon him for his report. In it he referred to the successes of the various branches. The Football team having played eight matches—winning three, drawing three, and losing two. The Cricket eleven having played fifteen—winning eight, drawing three, and losing four. He also referred to the Smoking Concerts held under the presidency of Messrs. Canton and Read, and to the first Annual Dinner held at the Holborn Restaurant in March.

In coming to the financial part he remarked that it was pleasing to find that here also they were able to record a balance on the year of £5 16 5½, and that this added to that from 1887, made the total amount standing to the Club £21 7 1.

In moving the adoption of the report, Sir Edwin Saunders said that it gave him great pleasure to hear of their good achievements, the more so as the past season had been such a bad one as regards the weather. Sports he considered were essential for the student, but he advised them not to carry them to excess. Though unable to take part in these games himself, still he took the greatest interest in their doings, since everything connected with the Hospital was dear to him. Lastly, he considered that the club had done wonders to uphold the credit of the Dental Hospital of London. Various other business was got through, including the electing of office bearers for 1888-1889. The meeting terminated by a hearty vote of thanks to Sir Edwin Saunders for so kindly occupying the chair, and again accepting the presidency of the Club.

President: Sir Edwin Saunders. Vice-Presidents: J. Hutchinson.; Morton Smale; David Hepburn. Hon. Sec. and Treasurer: James F. Colyer.

CRICKET.—Captain: A. R. Colyer. Secretary: F. C. Porter. Committee: F. Preedy; Forsyth.

FOOTBALL.—Captain: A. B. Cox. Vice-Captain: F. Brunton. Secretary: H. Pedler. Committee:—Bromley.

TENNIS.—Captain: R. Dickenson. Secretary: J. Knowles. Committee: W. S. Holford; F. Covell.

VACANCIES.

National Dental Hospital, 149, Great Porttand Street, W. The post of Lecturer on Dental Anatomy and Physiology is vacant. Application to the Secretary.

National Dental Hospital, 149, Great Portland Street, W. The post of Assistant Dental Surgeon is vacant. Application to the Secretary.

APPOINTMENT.

Mr. E. C. Fisk, L.D.S., Eng., has been appointed House Surgeon to the National Hospital, W.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

TEACHING IN DENTAL HOSPITALS.

To the Editor of the British Journal of Dental Science.

SIR,—By mistake you printed in your last issue, with reference to the number of teeth filled at the Dental Hospitals "best skill is not able to save more than 2 *out of* 6 teeth that come to the Hospital," it should have been 2 *out of* 9, (The numbers being as follows—1439 adult teeth extracted—436 filled making 1975 in all, a little over one-fifth, but not one-fourth. No mention is made in this calculation of teeth for children under 14, undoubtedly a lot of permanent teeth were extracted for them, but any fillings that were done for them have been credited, making the figures look even better than they stand.) The statement of the Dental Hospital of London for last month contains the following figures—1810 adult teeth extracted—517 stoppings—Total 2327; which is about the same proportion. The Victoria Dental Hospital of Manchester shows extractions of all kinds, including for Children 877, Fillings 121. The figures speak for themselves.

Yours truly.

C., L.D.S.

To the Editor of the "British Journal of Dental Science."

SIR,—An article on "Dentistry as Practised in Glasgow," written by me, and published in the *South Glasgow Gazette*, August 4th, you have been kind enough to consider worth re-publishing in your widely circulated and valuable Journal, for which please accept my best thanks.

In fighting this battle here, single-handed, against so many, and under *threats* of various kinds, it kindles one's *ire*, to see qualified dentists so lukewarm in the interests of their profession, they seem to think it not worth fighting for, and so allow these *Charlatans* to bring shame on Dentistry.

I would have been content to let the article remain without further Comment, had you not had a footnote in reference to the Dental Act of 1878. You state that the "B.D.A. have undertaken this onerous and thankless task' viz. the prosecution of *so-called* dentists, who practise without qualification or registration, they may have done so in some parts of England, but so far as Glasgow is concerned, *such is not the case.*

In this city there are persons known as practising under *strange devices*, yet when I called lately on the President of the Glasgow branch of the B.D.A. and laid one or two complaints before him, about certain men practising without being registered or qualified, and also about LICENTIATES doing work for these *Charlatans*, he listened with *perceptible impatience* for a few minutes then coolly informed me, that because I was not a member of the B.D.A. I could *not be recognised* as a Dentist, and that although he knew me personally as holding the same qualification to practice as himself, viz., the diploma of the Fac. Phys. & Surg. Glas. (and also as a well-known public man), it was of no avail, the *Oracle* had spoken,—"yet, I challenge this same Branch President to say whether or not it is a fact that only a few years ago he was himself an advertising dentist, even stating his fees."

Now, sir, when such men have the management of branches of the British Dental Association, is it any wonder that few men of spirit care about having anything to do with it? And further, any qualified man wishing to become a member of the branch here of the B.D.A. has to be balloted for (then personal spleen may win the day) and ten shillings and sixpence has to be paid yearly as branch dues, and twenty shillings as dues for the B.D.A. in all thirty shillings and sixpence every year; a sum not to be sneezed at in these dull times.

Well, sir, after being snubbed by this *great branch president*, I at once put myself in communication with the Faculty of Physicans and Surgeons Glasgow, to learn if they could not prosecute, the answer I received was "The Fac. Phys, and Surg. is not a prosecuting body. &c. &c." I then wrote to the General Medical Council, and got the same answer, with this addition, viz., that under the amended Medical Act of 1886, any person was at liberty to prosecute,—delightful information! but rather expensive. Now, as I have shown, the B. D. A. allows things to have full swing, and the two bodies, the one who has power to grant, and the other who has power to deprive men, of their diplomas gained by examination, will not prosecute nor grant any protection against these parasites. What is to be done? If a private individual were prosecuting, it would be ruin to that individual.

I hold that the Act requires amendment and that right speedily. Let the B.D.A. show qualified men that it is alive to the danger: then it will gain the confidence of those men, and so become stronger both in numbers and also financially: I could cite many cases in Scotland, aye even in Glasgow, where men are practising dentistry without being registered or qualified, and no notice taken by the B.D.A.

I enclose card of a young man whose knowledge of Dentistry is so limited that he cannot fill a tooth nor take an impression, in fact he even knows very little about mechanical work, yet he has begun practice, and has the audacity to put himself forward as an authority on Dentistry. Another of the same I know within some miles of this, and in a letter which I have received from a Dental practitioner (an L.D.S.) in England (which you are at liberty to publish) much the same information is given.

I need not in the meantime enter further into detail, but it strikes me forcibly that qualified men will be compelled in self defence, to try other measures and means, of letting the public know of their existence.

Some day soon if you will grant me space, I may have something to say about our Dental Hospital which I am confident will astonish a few of the contributors to that very select Charitable Institution.

I am, Yours faithfully,

ROBERT THOMSON,
L.D.S., F.P.S.G.

Hospital Reports.

MONTHLY STATEMENT of operations performed at the Dental Hospital of London, Leicester Square, from Oct. 1st to Oct. 31st, 1888:—

Number of patients attended		
Extractions	Children under 14	394
	Adults	1057
	Under Nitrous Oxide	903
Gold Stoppings		365
Other Stoppings		1216
Advice		146
Irregularities of the Teeth		97
Miscellaneous and Dressings		407
Total		4585

GEO. SEYMOUR, L.D.S., *House Surgeon.*

Work done at the Victoria Dental Hospital of Manchester during the month of October, 1888:—

Number of Patients attended		1170
Extractions	Children under 14	847
	Adults	
	Under Nitrous Oxide	82
Gold Stoppings		34
Other Stoppings		120
Miscellaneous		384
Total		1470

CHARLES H. SMALE, L.D.S., ENG., *House Surgeon.*

Monthly Statement of operations performed at the National Dental Hospital, from Oct. 1st to Oct. 31st, 1888:—

Number of patients attended		2164
Extractions	Children under 14	252
	Adults	533
	Under Nitrous Oxide	768
Gold Stoppings		106
Other Stoppings		542
Advice		424
Irregularities of the Teeth		73
Miscellaneous and Dressings		243
Total		2941

E. C. Fisk, L.D.S., Eng., *House Surgeon.*

British Journal of Dental Science.

No. 501. LONDON, DEC. 1, 1888. Vol. XXXI.

WHEN IS NITROUS OXIDE A DANGEROUS ANÆSTHETIC?

By Dudley Wilmot Buxton, M.D., B.S. Lond.

Member of the Royal College of Surgeons and of the Royal College of Physicians of England, Administrator and Teacher of Anæsthetics in University College Hospital, London; Administrator of Anæsthetics in the Hospital for Women and the Dental Hospital of London.

(*Continued from page* 932.)

We have now completed the survey of the action of nitrous oxide upon the different vital functions of the human body; it now remains to see how far the same effects will be prejudicial to the functions of persons who are more or less diseased. It is obvious that for practical purposes this is the most important question, since with the exception of country bred children the large majority of our patients are not typically healthy.

For convenience let us adopt the following division of our subject:—

I.—Is Nitrous Oxide Dangerous to Persons who, not actually Diseased are yet not in a vigorous condition?

II.—Is Nitrous Oxide Dangerous in Functional Aberration and Blood Dyscrasiæ?

III.—In Organic Disease.

1.—In extremes of age.

Very young children (*i.e.* below 6 or 7), are difficult to manage, but are able to take nitrous oxide with perfect safety. They go under its influence with great celerity, and regain consciousness in a very short space of time. In young children, the nervous system is soon and profoundly affected, violent jactitations and convulsive movements occur, if the nitrous oxide is pushed. I have never seen any symptoms which made me believe it dangerous for children to take gas.

Persons of an advanced age, if hale and hearty, take nitrous oxide extremely well. It is useful to remember that stertor and jactitation are frequently very late in developing. Elderly people are commonly the subject of weak, feeble heart action, due to fatty degeneration of its walls, enlarged (dilated) heart with weak action, diseased arteries, from atheromatous or fibroid change in the walls, chronic cough, the result of bronchial catarrh, chronic bronchitis, pulmonary emphysema, and so the remarks which are given below in reference to such diseased states should be borne in mind when we determine whether or not any given individual, well on in life, is a fit subject for nitrous oxide administration. If danger from such cause is not apprehended, nitrous oxide may be given with the utmost confidence.

I have administered to the extreme ages of life without the slightest inconvenience to patient, operator or administrator.

MENSTRUATION. It is a rule of surgery never to operate when the monthly molimen is present, but if any circumstance arises which is considered sufficiently important to override this rule, there is no reason contra-indicating the administration of nitrous oxide gas. Some women are very prone to syncope at their monthly periods, and hence, the likelihood of the onset of a fainting fit complicating the administration should be borne in mind. I have never met with instances of suppression and abnormal alteration of the menses which could be definitely associated, causally, with nitrous oxide.

Pregnancy is no bar to nitrous oxide provided it be deemed absolutely a necessity for the patient to become the subject of operation. Women who habitually abort should not be exposed to the dread and shock of an operation, but if this is unavoidable they should take gas, as that anæsthetic is less likely to produce a miscarriage than are the shock and pain of operative measures. The child is certainly not exposed to any particular danger from nitrous oxide, if properly administered.

Lactation. There is no reason why mothers who are nursing their infants should not take gas, it has no known power to affect the quantity or quality of the milk.

The Menopause.—Women between forty and fifty upon whom the "change of life" has come are in many instances thrown altogether out of sorts. They are highly nervous, excitable, inclined often to that insidious form of alcoholism, constantly taking a sip or two of wine or spirit "to keep themselves up," and are full of fancies, being either real or imaginary sufferers from a host of petty ills. To administer gas to such people requires tact, firmness and kindness, but they run no risk. Of course, when severe bleeding from the womb has occurred sufficient to blanch them, the anæmia so produced removes them into another category and demands an especial care (see below). Furthur, women at their climacteric are frequently the subject of functional aberration of the heart, and always to a greater or lesser degree of their nervous system (see under these headings below).

Weakly, ill-nourished persons, not the subject of definite blood dyscrasia or organic disease, should be eyed with suspicion, and watched *very* narrowly whilst gas is being administered. They are probably less liable to faint, and become collapsed under nitrous oxide than when operated upon without an anæsthetic, but they are always anxious cases.

NERVOUS SHOCK. Persons, who, without being the subjects of hysteria, hystero-epilepsy, or other kindred affections, are yet severely shaken through mental suffering, prolonged vigil caused by insomnia, or even by their inability to take nutritious diet, present the aspect of being so ill that they are often forbidden the solace of taking nitrous oxide gas on account of the fears their medical advisers entertain of the consequences. Such individuals are highly nervous and excitable, and although most willing to control their emotions are almost unable to do so. They frequently take an unusually long time to become narcotised and show excitement as they are going off, but otherwise they take gas well, and if that agent is used freely they remain unconscious a little longer than is common. There is no danger in anæsthetising such persons with nitrous oxide, but they are prone to experience after effects more or less severely. Thus there is commonly some prostration, inclination to headache, even slight nausea and faintness which may be very slight and transient, or sufficiently severe to warrant one in enjoining the recumbent posture and absolute quiet for the subsequent part of the day. I have had several opportunities of ascertaining the condition of such persons on the day succeeding the administration, and have invariably found it satisfactory. In one case it was deemed advisable to give bromide of potassium at night to relieve the nervous headache and ensure sleep, but this was in a very strongly marked instance of nervous perturbation. On more than one occasion contrary to my views, it was determined to operate upon persons suffering from the above symptoms without employing an anæsthetic, and then I am bound to confess the results were not happy. One patient fainted, another became so excited and nervous that operative measures were postponed, and others suffered more or less severely. Weighing the *pros.* and *cons.* I think it is wise to operate upon such cases under nitrous oxide, warning the friends that there may be excitement and after inconvenience. Unquestionably, when practicable, it is best to operate upon such cases at their own homes.

II. In Aberration of Function. Under this heading it is proposed to consider aberrations of the heart's action—functional affections of the heart; and functional affections of the nervous system. It is not the office of the present paper to enter into the pathology of any of the diseases, functional or organic, to which I may refer, nor is it contended that the divisions and classification adoption, are not open to cavil upon the ground of pathology, they have been selected simply as affording a convenient basis upon which to work. It is almost impossible in the present state of our knowledge to draw a hard and fast line betwixt functional affections upon the one hand and organic disease upon the other. The reason for referring mainly to functional aberrations of the heart and of the nervous system is that they are the most important in our present connexion, and what is more, are far more liable to be detected, or to give any serious trouble, than are functional perturbations of other viscera.

Functional affections of the heart are commonly found among

dyspeptics,
persons addicted to intemperance in alcohol,
excessive smokers,
the anæmic,
persons whose bodily health has suffered through some severe and prolonged illness, sexual excesses,
women at the menopause,
the neurotic, *e.g.*. hysterics, hystero-epileptics, &c.

The heart beats irregularly, at one beat strongly, at another feebly, or in grouped feeble beats, then strong beats. The pulse is often flickering. There is palpitation, at times the heart is felt to beat so violently that the patient puts his hand to his side, at another the heart seems to stand still; at all times the unhappy sufferer is in that diseased condition of being aware that he has got a heart. There is often flushing alternations of heat and cold. To physical examination of the chest, there are various conditions revealed. A want of synchronism leading to blurring of the sounds, and the evidence of marked irregularity of action, alike in time and force. These persons are prone to faint, sometimes faint will succeed faint with alarming rapidity, each attack being initiated by very slight causes. Although the "drinker's heart" falls into this category, it is often an aggravated stage of functional heart affection, but, at all events, in its later forms is associated with fatty changes in the heart substance itself, and needs especial care and circumspection.

Unquestionably, functional affections of the heart in milder cases are no drawback to the administering of gas; in the severe forms, and especially that form associated with chronic alcoholism while one would advise the administration of gas, rather than run the undoubted risk to the heart, incurred by operating without an anæsthetic ; one would regard the case as worthy of especial care, and would be prepared accordingly.

The danger of these cases is from syncope. This tendency to faint occurs just at the commencement of the inhalation, and is a "fright" and not a "gas" effect, and after the operation, just as the patient is resuming consciousness. It is in these cases that there is so much danger of fatal syncope supervening when the patient is insufficiently anæsthetised, and is not truly anæsthetic. When once the patient has taken enough gas to blunt the senses, the administration should be freely pushed, for in complete unconsciousness is the patient's salvation. In these persons the tendency to faint comes wholly from the nervous system, so that nitrous oxide gas in no wise imperils the heart, and by its sedative action upon the nervous system must prove beneficial, rather than detrimental.

In one person, to whom I had to administer gas upon several occasions to enable a dentist to remove a number of carious teeth, there was a most unusually severe condition of flatulent dyspepsia. He eructated large quantities of sour gas, his stomach was distended with wind pressing upon the heart and interfering with its due action. Nausea and faintness were complained of, but no symptom causing one the least alarm followed the inhalation.

Functional aberration of the Nervous System—A very large category of cases comes into this group, but none of them is likely to be affected prejudicially by nitrous oxide gas.

The highly emotional, the hysterical and the protean forms under which we meet functional neuroses, present really little importance to us in addressing the question of any danger likely to be incurred by inhaling nitrous oxide. The dangers are wholly imaginary, and the after effects—languor, headache, &c.—are really the result of the individual's fearful anticipation of the operation and not of the anæsthetic employed.

Hallucinations are liable to be elicited by the gas which may last hours or even days after the inhalation, and so it is always absolutely necessary to have *ex parte* witnesses within sight of the operating chair or sofa, alike for the sake of the patient and the operator.

Epileptic and epileptoid conditions will be considered later on when general organic diseases are considered.

To be continued.

AN ADDRESS DELIVERED BEFORE THE ODONTOLOGICAL SOCIETY OF MANCHESTER.

By L. Dreschfeld, L.D.S., President of the Society.

Gentlemen,

In taking the chair this evening, I have, in the first place, to thank you most sincerely for the great honour you have done me in electing me President of this Society for the ensuing year. I must ask your kind indulgence for my shortcomings, which I know are by no means small, and I hope with the kind assistance of the committee and the goodwill of every member of this society that our coming year may be as successful as the former years, and that the good work which the Society is doing may not diminish during the time that I shall have the honour to hold the presidentship. I need not refer to the events in the history of the Society during its brief existence. The number and the quality of the papers read, the attendance at our meetings, and the discussions which have taken place, all show that the Society has a firm and staple basis and will in the course of time form an important centre for mutual instruction and for the advancement of our profession. Nothing can be more striking than the advances which have taken place in Dental Science and Dental Art and in that advancement, Manchester has taken an active share. We have now in our midst a school for dentistry which is gathering round it more and more students; we have also a dental hospital, which is not only of great public benefit, but enables our dental students to get that clinical and practical experience, which can only be obtained in institutions where the material for teaching is very large. The existence of such a school and hospital in our town apart from being a boon to students living in this neighbourhood, cannot but exercise a very healthy and beneficial reaction on the dental profession in our town generally; for the presence of such institutions acts as a stimulus to the oldest members of the profession, and I believe the foundation of a Dental School in Manchester has had something to do with the foundation of our own Society. However, I will not pursue this subject any further, as I have another, and by no means an easy task before me, that of making some introductory remarks.

Gentlemen, when I received the very pleasing notice that you had elected me your president, my joy was not entirely unmixed. I naturally thought of the responsibilities which the acceptance of your offer involved, and above all, I thought of the opening address which I was expected to give. I searched amongst many subjects, which I could well bring before you, but I had great difficulty in finding one which would be novel and interesting.

The social status of our profession, the recent legal enactments have been dealt with before in a satisfactory manner by my predecessor that I need not refer to this subject again, to give a retrospect on the progress of dentistry has so often been made the subject of an address that, I had to abstain also from this. I was thus in great dilemma in the choice of a subject. The history of Dentistry seemed to me to be a subject full of interest, but I had neither the time nor the accomplishments to treat such a subject. In looking over the literature on this heading I came upon an essay, written many years ago by a French Doctor Duval, on the Dentist's Art as known to the Ancients. This essay was published in the *Journal de Médicine, Chirurgie and Phamacie* in 1809 and contains many interesting facts. As the paper itself is now difficult to procure and as the subject is certainly a novel one, I thought it might be of sufficient interest to be brought before this society. The art of dentistry was not unknown to the ancients, they not only studied the causes of dental diseases, but they also occupied themselves with the treatment of the affections of the teeth, but also with the prevention of these diseases and even the replacement of lost teeth, what they considered essential organs to health, was practised by them.

Vestiges of dental art are found with the Greeks, the Hebrews, and the Egyptians, but the epoch of more exact knowledge on this subject commences with the father of Medicine, Hyppocrates, who lived about 400 years before the birth of Christ. He knew something about the development of teeth and noticed their affections from the time they pierce the gum up to old age. He indicated certain sympathies which existed between the Dental apparatus and the chest and the stomach, the influence of the seasons, which appeared to him sufficiently strong to produce epidemic toothache. He attributed these affections in accordance with the then existing crude pathological notions, to humours which caused " fluction " to this part and to dissipate these humours he prescribed the chewing of certain substances, and if these were insufficient, he ordered castoreum and pepper. The actual cautery was also a means of cure which Hyppocrates recommended for toothache, but he leaves us to conjecture whether the redhot iron was applied to the tooth itself or on the gums or on the temples, which certainly was done by the old Egyptians, or if he applied it to outside of the chin near the mental foramen, as practised by some of the old tribes, the Japanese in particular.

The nature of abscess of the gum was also known to Hyppocrates and he states even that they occasionally cause the loss of carious teeth. He also speaks of the " various putrefactive changes " noticed in the mouth, and the difficulty of dealing with them, and he perhaps is the first to describe caries of the maxillary bone. The observation is interesting enough to be quoted : he says in his 5th book, " After severe pains in the teeth, from which the son of Metrodores suffered; there appeared near the gums a large swelling, this discharged some pus and a portion of the lower jaw became detached along with the molars which were implanted on it ".

Though Hyppocrates appears to be the first to have spoken positively about the extraction of teeth, it would seem as if extraction of the teeth had been practised before him. A passage in Cicero seems to indicate as if this operation had been invented by Æsculapius, according to another Greek author—Erasistratus—speaks of an instrument, very much like one used for extraction of teeth, which was to be seen in the temple of Apollo at Delphi, and as this was made of lead, he argues that this instrument was only used for loose teeth, where extraction would be easy. Hyppocrates himself was not in favour of tooth extraction, he did not think it necessary or advisable in toothache, except when the teeth were carious and loose. He also believed that every body could easily use the forceps used for this operation, as their application was simple and easy. This same great physician had also noticed that ulcers of the tongue were sometimes due to the sharp and pointed teeth and that such teeth kept up the irritation of the ulcer. Knowing the cause, should he have not devised some means of remedying this defect! Galen, the commentator of Hyppocrates, attributes to him the invention of the saw for that purpose.

If with a fractured jaw the teeth became loose Hyppocrates advised to attach them to the neighbouring teeth with a thread of gold or of silk, in order to retain the loose teeth in their situation.

It is probable, however, that this remedy had already been often applied before Hyppocrates, for it is distinctly stated both in the Greek and Roman laws that if a corpse is burnt no gold should be thrown on to the pile, but it was permissible to burn the corpse without detaching the gold which may bind together his teeth.

The use of a gold or silver thread has probably also given rise to the idea to place back into the original situation and to fix into that situation a tooth which has dropped out or to replace it by an artificial tooth. Though we do not know when exactly this operation was first introduced and though it seems mentioned in its details only in the 11th century by an Arabic doctor Albucasis yet there is no doubt to judge from the writings of Greek and Latin poets that artificial teeth were known to the ancients. One poet, Martial, remarks in indicating an old toothless woman, who had also lost an eye, that the art of the dentist was further advanced than that of an oculist. This same poet tells us also that these artificial teeth were made either of ivory or bone. He even mentions that some took care to take the artificial teeth out at night, with the intention no doubt, to keep them proper and white. It is well known that the old Indians filled up in a neat manner the gap left by a fallen out tooth with small plates of gold.

From the time of Hyppocrates to Celsus dental art seems to have made little progress, though famous surgeons had lived during this period and we only find the mention of certain formulæ for toothache.

During the reign of Augustus we find that the care and preservation of the teeth played an important part and we find mention of several dentifrices. Thus we have a description of the dentifrice used by Octavia, the sister of Augustus, and which consisted of burnt hart's horn, the charred remains of several plants, common salt, alum, and glass reduced to fine powder and to which were added certain aromatic bodies, quite different to this were the means used for cleaning teeth in vogue with some tribes, especially by the inhabitants of old Spain, who according to Strabo rinsed the mouth every morning with urine.

It is certainly with Celsus that dentistry had made considerable progress. Celsus speaks of toothache as the greatest of all tormentors and to prevent it, or relieve the pain, he give different remedies, the treatment being partly hygienic and dietetic and partly medicinal. In toothache he restricts wine, food, prescribes purgatives, then the vapour of hot water, with calming and slightly astringent lotions and epistastics. Accor ding to him, one might well desist from drawing a carious tooth and he recommends in caries the administration of opium, pepper, pyrethria or sulphur. He practised teeth extraction, and recommends as a preliminary precaution, to loosen gently the tooth before extraction, an advice which we find still followed many centuries after by Ambroise Paré. Celsus also remarks that sometimes tooth extraction is followed by displacement of the lower jaw, or by an affection of the eyes. Hæmorrhage was held by Celsus to be a sign of fracture of the alveolar process, he gives the advice to extract from the broken alveolar process the fragments and to remove also if possible at once fangs of teeth that may have broken during the extraction, and he used special forceps called rizagra for that purpose. This distinguished physician also advises in case a permanent tooth appears before the corresponding temporary is lost, to extract the temporary tooth and by often repeated pressure by means of thumb and finger to gradually put the permanent tooth into its proper position. Valuable and interesting are also several other of his observations on the hygiene of the teeth. He recommends to remove all that blackens the enamel and diminishes its polish, and to rub the teeth with a mixture of roseleaves, gall apples and myrrh ; if the teeth get a little loose he recommends cauterisation of the gum, and if a fall or blow has loosened a tooth, he employed threads of gold or silk. The filling of teeth has not escaped the notice of Celsus, and he speaks of the filling of carious teeth with lead, with gold, and other substances as already well known ; the saw, which as we observed before, was known to the ancients, was also used by Celsus to destroy sharp edges on teeth 'which did give rise to ulcers on his tongue.' He and others about his time used the saw when the tooth appeared to be too long. Sawing of teeth when too broad was also practised with the object, according to some, to prevent toothache.

Passing over a number of names, who were either contemporaneous with Celsus or lived shortly after him, and who only enriched the number of dentifrices already known, we came to Apollonius, who recommends amongst other things the introduction of medicine into the nose and into the external ear for toothache.

Tooth picks are no new inventions, they were known to and mentioned by Dioscorides, and they were made of a certain kind of wood or of quill. We find also now that scarification of the gums were recommended for toothache, and for this purpose a sharp fishbone was used. Superstition, which always played, and still plays a part in medicine, gave rise to curious and manifold devices ; thus Dioscorides recommends a certain plant, named lepidium, as a charm against toothache, if it be worn in the form of a necklace, and long after him we find doctors still publicly advocating remedies showing the credulity and superstition of the time. A French physician, Marcel, who lived in the fourth century, recommends against toothache the following nostrum : Take the first leech you find ; put it in the mouth, withdraw it quickly and squeeze it between the middle fingers of the right and of the left hand and speak as follows : Leech ! just as this leech will not return again into the mouth, so may teeth no longer ache for a whole year. This process must be repeated, adds Marcel, every year and in this way all toothache can be prevented.

Continuing to trace the history of Dental Art we find

Plinius mentioning the fact that qualities of drinking water may have an injurious effect on the teeth, he reports that the soldiers of the army of Caesar Germanicus, when encamped in Germany lost all their teeth after having drunk the soft water of a certain well and Galen had occasion to notice the same fact.

Archigenes invented a small trephining instrument to perforate the teeth which were the seat of violent pain and which did not yield to medication ; he seems to have recognized an inflammation in and around the root of the tooth and Galen states that in such an inflammation the tooth appears livid.

Caclnis Aurelianus treats extensively on tooth extraction, which he condemns when used for toothache, for says he, just as we do not advocate the cure of pain in other parts of the body by separating them from the body so must we not expect to heal toothache by drawing the teeth. He recommends external applications and internal administration of drugs and general treatment for toothache, and varies the treatment according as the pain is acute or more chronic : diet, rest or exercise, frictions, bleeding, purgatives. astringents, and scarifications of the gums are the various remedies he suggests.

Galen is the next author we have to mention ; he lived in the second century, he made diseases of the teeth a special feature of his subject, being himself a sufferer from frequent toothache. He distinguishes between toothache which comes from the tooth itself, that from which originates in the gums ; he also distinguishes between two kinds of caries, one kind which he compared to caries of bone and which he calls dry caries, and one to an internal cause ; another kind which he compared to ulcers of the skin, and what was known as moist caries. As he believed that dry caries make but little progress, he recommends the dissipation of moisture for moist caries, as thereby it—the moist—is changed into the dry caries. Galen also states that he has seen teeth that were loosened by ulceration from the gums, rise above the others, and give rise to pain, and he recommends that such projecting teeth should be filed off.

Galen speaks at length of the advantages which accrue to the human being in the performance of the various functions of the body, by having a good set of teeth, and lays the greatest stress on the hygiene of teeth ; he prescribes gargles with some, especially after one has partaken of milk or other fat and viscous food. Numerous also are his prescriptions for dentifrices; these are partly his own, partly they were those of other authors, which were handed down to him.

Other authors about this time contributed but little new to the doctrines transmitted to them. Adamantius distinguishes many causes of toothache and gives some new remedies. Amongst these are the aromatic substances and one favourite and singular remedy, namely, a mixture of snow and honey, which, if kept in the mouth a few minutes relieves the toothache.

After Galen, it was Paulus of Egina who occupied himself much with dental surgery, and who for the first time discarded the drugs that were reported to cause the falling out of the teeth, and in their stead recommended strongly their extraction with instruments. Those teeth which were so adherent that they could not be well extracted, he recommended to be cut off by the crown. He recommends also the detachment of the tartar by means of a pointed sword. He gives also numerous prescriptions for the preservation of the sound teeth; besides dentifrices, he recommends the cleaning of the teeth after meals, in order to prevent the injurious effects of particles of food which may get between the teeth, and he especially warns people to bite hard bodies and to eat things which are very acid.

Such was the art of dentistry amongst the ancients with the fall of the Roman empire, medicine in general and its different branches did not escape the decadence, and for a long time remained in a neglected state.* If we refer to the writings of Ambroise Paré we see how little progress had been made in Dentistry, and it is only with this century that dental art and dental science gradually developed. Even at the commencement of this century dental art was still in its infancy, and left in the hands of barbers and uneducated persons; how rapidly it advanced, how great was the progress and how it asserted itself an an important branch of medicine and surgery I need not allude to: the object of this communication was simply to allude to the state of dental art amongst the ancients, and I trust that the observations I have related may not prove uninteresting to you.

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* On referring again to the writings of Ambroise Paré, whose book was written in the year 1579, we see for the first time the mode of extracting teeth in the 16th century. Considering the early age of printing the woodcuts of the instruments illustrating his works, appear to us as being remarkably deftly pourtrayed and deserve our special attention. His mode of extraction is at once characteristic and unique; the patient had to sit on a low seat between the operator's legs, who searched about the root of the tooth with a special instrument to try and loosen it from the gums, should it, however, prove to be still immovable, a toothed forceps must be used and the tooth extracted. Transplantation of the teeth is also mentioned by this celebrated man, who reports a case in which a lady of nobility having a rotten tooth, had it extracted and replaced by a good and sound one from the mouth of her maid.

COCAINE HYDOCHLORATE, THE BEST OBTUNDER IN EXTRACTION.

By A. King, L.D.S.I., Margate.

Much has been said for and against this wonderful alkaloid, wonderful in the sense that little is actually known about its action on the human system. Like many others, I have shared great timidity. and at the same time due caution in its administration, and I must say after reading* Mr. William Hern's addresses before the Odontological Society of Great Britain, I handled the drug with great trepidation, but since, after experimenting upon myself and others, I have come to the conclusion that the Hydrochlorate solution in the form of a mild injection used pure, is without doubt the very best pain obtunder yet introduced to the profession. To say a tooth (no matter under what condition) can be removed absolutely without pain under the influence of cocaine would be absurd. There are cases, no doubt. I have had patients say they have felt no pain, but their general appearance, contortion of countenance, &c., leaves me in doubt in spite of what they have said. I believe that under some conditions, and with some individuals, when they are thoroughly persuaded and really believe the tooth is coming out without pain, it is possible to extract the tooth painlessly without an anæsthetic. Some years ago I had been told that this could be done, and without having the least faith, I determined to try it by for myself. I administered N_2O gas to a boy about 13 years of age, his brother had also been distracted with toothache. When he reached home and related the story of its not hurting him, &c., to his brother, they both returned in the course of an hour for the purpose of extracting the other boy's tooth. I determined then to try my experiment taking the face piece precisely as I did before, but putting in about 2 min. of chloroform and no gas just to give him a smell of something. I told him to go to sleep and think of nothing but one fact (*i.e.*) that he would feel no pain, after holding the mouth piece *in situ* a minute I removed it, and out came the bicuspid tooth. What did you dream? I asked. The boy's reply was, I dreamed that it was my brother that was having it out." I have often told this tale and though I say it as a positive fact, not many believe me. All I can say is, few deceive me on this point, they are from my experience more ready to overrate the pain.

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* A Paper read before the Odontological Society, July, 1887.

I have administered this anæsthetic in 50 cases, injecting hypodermically the hydrochlorate solution from 5 mins. of 10°/₀ solution to 10 grains without any of the dreadful symptoms and results experienced by* Dr. George Cunningham.

In the case of a lady, aged 45, 10 grains was injected during an hour and a half and several teeth removed. She informed me she had taken a great quantity of cocaine at various times for chronic sore throat, she experienced little pain in extraction, and after the operation, there was a feeling as though her mouth was enlarging, then she lost power of one side of the tongue, in half an hour all this passed away, and on visiting her next morning she complained that slight palpitation had kept her awake, but after taking the strong dose of sal volatile I gave her, her condition became normal and she went to sleep. Beyond this I have had no bad result, if this could be called a bad result. In 50 cases, Dr. Cunningham records cases of swollen lips. I have had several complain of their lips feeling enlarged and swollen, but upon close examination those parts were not so.

This, no doubt, arises from the excitability of voluntry muscles in large injections of cocaine. I say that in nine cases out of ten (without an anæsthetic) the pulse of your patient rises when they come to the house, increases as they near the chair, and lowers again before the actual operation is over, it rises again during the operation. This is proved by carefully taking the various sphygmogram tracings of the pulse at each interval. Fainting, tingling sensations at the extremities, Dr. Cunningham tells us are the serious symptoms of cocaine.

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* Paper read before the Odontological Society. July 1887.

Are not these an every-day complaint from a patient after extraction? Another case of Dr. Cunningham's is, of listlessness, convulsive movements, cramp in the abdomen, spontaneous muscular contractions in each arm, alternately, loss of power in the lower limbs, chattering of the jaws, etc. Now I would ask, who, having only had a moderate experience of tooth extraction has not seen all these symptoms follow without the administration of an anæsthetic at all.

No amount of caution can be too great in administering a new drug to a fellow creature, and apathy on the other side should not obstruct the scientific investigation of a valuable pain obtunder. It is due to the practitioner himself that he runs no risks, for while the public are ready to acknowledge a skilful operation when it turns out successful, woe to the man who inflicts injury by the mal-administration of any drug. Science creeps on slowly, and, doubtless, had it not been for the chemists' assistants in Paris who endeavoured to "reach the undiscovered country from whose bourne no traveller returns" by swallowing a larger quantity of cocaine hydrochlorate, and awaking to find no discovery had been made in this direction but a valuable one so far as science is concerned.

It would seem that in very large doses there is no fatal result. In a more moderate quantity paralysis of respiration ensues.

The French chemist, who it seems took about 1 oz. did not suffer from paralysed respiration. There is no record of how he felt, but he got well soon after. (Pray, readers, do not take 1 oz. of this alkaloid yourselves; you might not get off like the chemist.)

At the present time we must look upon this drug as a treacherous alkaloid, and use it with great caution. From my limited experience it seems the hypodermic injection of 10 to 15 minin of 10°/$_0$ solution, or 5 mimins of 20°/$_0$solution is about the safest form to administer, it being comparatively harmless. My method of administering the obtunder is as follows, and I venture to say that if all the particulars are carried out, and the cocaine given pure, good results will follow.

I make a 20°/$_0$ solution of pure hydro-chlorate of cocaine filtered two or three times, this will keep good for a week, examine the solution before use, if I find any micro-organisms, or thickness, I throw it away and make a fresh solution. I pour out the solution in a small test tube and hold over a spirit lamp until I get it about the temperature of the system, then hold my needle to the same flames for a short time until it is about the same temperature, having my forceps selected and placed into warm water by my side, I draw up into the syringe 3 minims, and thrust the needle about three quarters of an inch up or down into the soft tissues in a line with the fang or fangs of the tooth, and withdraw the instrument a very little and slightly press the piston. Then again and again occupying about one minute and half in withdrawing the syringe needle altogether. This will prevent the solution escaping on to the surface of the mucous membrane, and allow it to be absorbed immediately on the removal of the needle, I place my finger on the puncture and liberate myself by replacing the patient's finger, telling them to press gently, and leave your patients for three minutes. Then, with a mild countenance and with a calm manner repeat this process on the other side of the fang drawing up another three mins. of solution. I size the tooth in the ordinary way. It is my practice to say to my patient, did you feel it? and the reply in most cases rewards me by being, "No, but I just felt the instrument screw round, which was nothing," &c.

Cocaine is not only a valuable obtunder in the extraction of teeth, but it is a sure cure for sea sickness, and a very effectual remedy for sickness in uterine irritation in the early period of pregnancy.

PLASTIC FILLINGS.*

By Mr. F. C. Porter.

Mr. President and Gentlemen,

Of the filling materials which come under the term plastic, amalgam is, I think, the most important, and therefore I propose discussing that class of fillings first.

The amalgams which are presented to us usually consist of the filings of certain metals, the proportions of which vary with the different samples, to which free mercury is added to the requisite amount. In some preparations, however, as for example Sullivan's, the precipitated metal is already united with the mercury, and requires the aid of heat to free it, and render it workable for Dental purposes.

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* A paper read before the Students' Society and Dental Hospital of London.

As each metal present often affects materially the characters of the amalgam of which it is a component, it will give us a clearer insight into the properties of amalgams, if we enumerate the metals most commonly used, and briefly discuss the influences they are severally supposed to exert.

Silver is the metal which is present to the largest extent in most amalgams. It has much to do with the discolouration of both filling and tooth, due, according to one authority, to the fact of its forming with Sulphuretted Hydrogen, with which it comes into contact in the mouth, Sulphide of Silver. It adds considerably to the hardness of the amalgam, but also lessens contraction while setting if present in proper proportion.

Tin is not used to the same large amount it was in the older preparations, as, if present in too large quantities, it is found to be conducive to extensive shrinkage, and also to loss of edge strength. It does, however, possess the beneficial effect of adding to the easy working of the mass.

Copper enters mainly into the formation of Sullivan's and similar amalgams. The chief fact to be noted in connection with this metal is the extent to which it stains the surrounding tooth structure. The chemical process by which this phenomenon is produced, is believed by Mr. Tomes to be due to the Sulphide of Copper on the surface of the filling being oxidized into the Sulphate, which being easily soluble permeates the surrounding structures, where it is again slowly deoxidized into the Sulphide. Copper also quickens the setting and lessens the amount of shrinkage.

Gold, though present in quantities much smaller than the preceding metals, exerts certain important functions, for when used to an amount not exceeding 4-10 per cent. it not only lessens the shrinkage, but adds to the maintenance of a good colour. Should, however, it exceed those limits it prevents thorough hardening from taking place.

Cadmium was at one time used to form an alloy with Mercury, but is now entirely discarded, owing to the objectionable manner in which it stains the dentine a brilliant yellow dependent on the formation of Sulphide of Cadmium, added to the fact that its amalgam is excessively brittle.

Platinum promotes quickness in setting, and greater hardness after the setting.

Palladium forms with Mercury an alloy useful under certain conditions, possessing a marked advantage over many other amalgams, in as much as it is free from shrinkage, marked expansion on the contrary accompanying setting. It is highly probable that Palladium enters into a closer chemical union with Mercury than the metals already discussed, for when hardening is occurring, it is accompanied by the evolution of much heat and in some instances by a somewhat violent explosion.

Let us now proceed one step further, and investigate what happens when the mercury is added and mixed with the filings.

It is a well known fact that when certain metals are mixed together in the molten state, they are capable of uniting chemically, though feebly so, and forming what is termed an alloy, differing with regard to its melting point, and other physical properties from any one of its constituents. Now at ordinary temperatures mercury is in the molten condition, and by virtue of that condition produces the same effect as heat upon the filings with which it is mixed, for it enables them by dissolving them, to form with itself, and one another an alloy. As a rule, however, more mercury than is required for the formation of the actual alloy is used, and the result is an alloy, or amalgam dissolved in an excess of mercury. This brings me to a point of some practical importance, viz. :—What is the proper amount of mercury to mix with the filings? Much or little? Dr. St. George Elliott, who has made some experiments in this direction, has arrived at the conclusion that the requisite quantity varies with the particular amalgam used, and that no hard-and-fast rule can be laid down. Thus, he found that Sullivan's amalgam contracted to a much greater extent when used very dry than when used with a medium amount of mercury. Ash's amalgam was found to contract least with an excess of mercury, while Fletcher's extra plastic showed to greatest advantage when used dry, for then actual expansion took place.

The exact nature of the various molecular changes, which must of necessity take place during the hardening of the mass, is not thoroughly understood; but two alterations in its physical properties, viz., an alteration in bulk, and a change in shape, are alas! but too patent. As is but natural, the change in bulk, which an amalgam, undergoes is materially influenced by its composition. This change, I believe, mainly occurs during the process of hardening, a varying degree of contraction usually taking place. In some cases, however, as for example, in amalgams containing a preponderance of silver, it is found that although contraction occurs at first, after the mass has thoroughly hardened a gradual process of actual expansion commences, which continues for several days.

The change in shape seems to begin when the hardening is completed, and continues for days and even months. It is generally assumed, that this change in form is due to an inherent tendency of the amalgam to assume a spheroidal shape. Mr. Kirby, who has made some careful and prolonged investigations, took some bars of amalgam in which the mercury was unequally distributed, the amalgam being softer on the surface, than in any other part and found that under these conditions the bars curled up at the ends, but, that when they were of the same consistency throughout, no such curling was noticed. One bar of Palladium and some of Sullivan's amalgam gradually returned to their first form.

Preparation of Cavities. The success of a filling depends as much upon the proper preparation of a cavity, as upon the proper insertion of the filling material, and though the preparation of a cavity for amalgam is not so complicated as for gold, there are one or two points to which I would direct your attention.

(*a*) The edges should not be bevelled off, as the thin layer of amalgam thus left round the edges of the cavity is liable to chip off, and so produce a ledge affording every opportunity for the lodgment of particles of food.

(*b*) Many walls of weak enamel, which it would be inexpedient to leave in gold work, are retained with advantage, especially in weak molars. Dr. Flagg even goes so far as to recommend the retention of overhanging edges in order more efficiently to meet the spheroiding tendency of the amalgam.

(*c*) The quickness with which amalgam conducts heat should never be lost sight of, and in any but very shallow cavities a non-conducting layer should intervene between the metal and the pulp, should that organ be living.

Insertion of fillings. The methods of inserting the filling are numerous and varied. Of these I will mention two. Firstly, that used by Dr. Flagg, who most strongly objects to amalgam being inserted by burnishing it against the sides, since he asserts, that by that method union between the successive pieces is imperfect, and leakage inevitable. He advocates that each piece should be driven into place by a succession of light blows from a serrated and flat plugger a more perfect filling being thus obtained.

The method, however, which gave the most satisfactory results with the ink tests—so called,—is that, in the first place, I believe, recommended by Dr. Bonwill.

The amalgam being mixed to a moderate plasticity, a certain quantity is introduced into the cavity considerable pressure applied over its whole surface by means of a pad of bibulous paper or amadou pressed against it by some instrument, the mass being thus driven home, and a considerable quantity of mercury simultaneously expelled. Successive pieces are treated in a similar way until the cavity is completely filled.

As much superfluous mercury as possible should be got away from the surface of the filling by the use of tin or other means, for Mr. Kirby found that were mercury present in excess in any portion of the mass more than another, it seemed to leave the part where it existed in the greatest quantity and be taken up by the drier portions, causing thereby contraction in the former, and expansion to a like extent in latter parts.

Matrices should always be used in interstitial cavities, it being well nigh impossible otherwise to exert sufficient pressure to insure a watertight plug. To see the patient again after the hardening of the filling is a rule which if possible should never be broken, as there is always an air of more or less uncertainty, whether there may not be some overlapping edges left, which, while the material was still in the plastic condition, it was impossible to detect. Moreover, the filling having been once polished is more likely to retain a good colour.

The all important question to us as practical men is, what right has amalgam to occupy the position of eminence, it most assuredly does in the rôle of our filling materials, and for what cases it is best adapted? It possesses certain deleterious qualities, which will ever prevent it from being of universal service, for as we have seen, it alters its bulk, and undergoes a change in form, it discolours and stains the tooth, and yet, in spite of all these grave drawbacks, it is used as a permanent filling, in all probability to a greater extent than even gold itself. Whether rightly or wrongly is another matter.

Comparing it with the latter metal, I venture to assert, that in the cavities of teeth of strong, or even medium structure, which are of easy or fairly easy access, it is immeasurably inferior, and ought never to be used unless attendant circumstances peculiar to the case demand it.

But on the other hand in many cases of every day occurrence, it is far and away more suitable than gold. Take for example such instances as the following :—A broken down molar, whose crown has entirely disappeared save for some apologies for walls. In such a tooth, the insertion of a gold filling would occupy several hours, thus taxing the powers of endurance of the patient to their utmost, with the probable result of anything but a perfect filling. An amalgam on the other hand, could be inserted in a comparatively short space of time and would in all likelihood under such circumstances last as long, if not much longer.

Again, the permeation of the tooth structures by the soluble copper salts contained in many amalgams is an important tooth saving factor, rendering the structures more impervious to the action of caries. Hence the manifest advantage of copper amalgams in teeth of an excessively weak and chalky nature.

In certain cavities at the back of the mouth, which are by their position extremely difficult to fill, a better filling is more likely to result from the use of amalgam than gold.

One of the greatest difficulties we have to contend with as operators, is the filling of children's teeth, and it is within our power to either greatly diminish, or augment those difficulties. To force a child not yet in its teens to go through the process of having a gold filling put in, is a practice, which cannot be too strongly condemned, when one of the plastics can easily be made to bridge over the time till the insertion of a gold, (if necessary), will be better tolerated and more highly appreciated by the individual in question.

Amalgam in incisor teeth is entirely out of place, save in the posterior surfaces of some canines, and should for many obvious reasons never be used.

Most assuredly the use of amalgams is often abused, and hence I think the odium with which some men regard it, but because such is the case, is no argument against its legitimate and proper use. It has, as I remarked, grave drawbacks, but yet it has often stood that severest, and most trying of all tests,—time, with remarkably good results preserving crumbling and broken down teeth year after year, when no other substance would ; which fact alone proves that we can ill afford to discard it, but should rather endeavour by every possible means to remedy its present defects and procure preparations as free from them as possible.

The osteo plastics are the filling materials to which I would next direct your attention.

The first of these that came into use, was the oxychloride of zinc consisting of a powder of the oxide, and a liquid of the chloride of zinc.

Owing, however, to the great facility with which it is acted upon by the fluids of the mouth, it is practically worthless as a permanent filling, soon dissolving away at the cervical edge, easily wearing away if subject to continual mastication, and to crown all is possessed of distinct hygroscopic properties. It can, nevertheless, be used as a floor, or to line cavities, and is useful for obtunding the sensitiveness of dentine.

The osteo now in general use is the Oxy-Phosphate of Zinc. The composition of the various preparations naturally varies in minor details, but it is mainly as follows (*a*) Zinc oxide in the form of an amorphous powder, which has gone through a process of being packed in a clay crucible, and heated almost to whiteness for a period of some two hours, causing it to be reduced to something like half its original bulk, and afterwards pulverized finely in a mortar. (*b*) A liquid, or in some instances, a crystalline solid consisting of one of the varieties of Phosphoric Acid.

Zinc phosphate does not possess many properties suitable for a permanent filling material, the same drawbacks being present, though in a modified degree, that were noticed in connection with the oxide. It has, however, numerous uses; thus :—(1) Without discussing the advisability, or otherwise of capping an exposed pulp, zinc phosphate mixed to a creamy consistency with the addition of a little oil of cloves forms a very efficient protector.

(2) As a flooring in the crown cavities of molars it is of inestimable value.

(3) In pulpless incisor and bicuspid teeth, it makes a very good root filling, if the insertion of a gold plug is contemplated, as by undercutting the lower part of the canal, a starting point with a solid base is easily procured.

(4) It is good as a lining for weak walls of enamel, for besides adding considerably to their strength, it protects the tooth from being stained should an amalgam be inserted.

The last of the filling materials we have for consideration is gutta percha.

Pure gutta percha is the hardened juice of the Isonandra gutta, and other trees belonging to the natural order Sapotaceæ, and growing in Singapore, in Borneo, and other islands of the Indian Archipelago. It is insoluble in alcohol, but soluble in ether, chloroform, and carbon bisulphide. The gutta percha used for dental purposes has certain inorganic substances admixed, the chief being, I believe, zinc oxide and sulphide, calcium carbonate, and aluminium.

By far its greatest use is that of a temporary filling, for which it is specially fitted, being easily and quickly inserted, and as easily and quickly removed. When gutta percha is inserted into a tooth containing an arsenic dressing the precaution should invariably be taken of putting a metal cap over the dressing in question, for, be the stopping inserted ever so carefully, it is almost impossible to be certain the pressure is not exerted directly over the exposure.

As a root filling, gutta percha is called into requisition by many operators, being, I believe, generally used as follows. The root having been thoroughly cleared out, and well dried, a broach is passed up with a few fibres of cotton wool soaked in gutta percha dissolved in chloroform, whisked round the apex and removed, leaving at the top a film of gutta percha sealing the apical foramen. This being done, the root is then filled with finely tapering cones of gutta percha.

In cavities extending down to, or below the gum, where a temporary filling is required, a combination of osteo and gutta percha is very good, the latter being used at the cervical edge as it is much more durable in that vulnerable position than osteo.

Gutta percha as a permanent filling must be used with care and discrimination to be of any service.

In certain cases, as for example, in buccal cavities of molars, and in interstitial cavities, where it is not in any way exposed on the masticating surface, it has proved itself of immense value, lasting in some instances for several years.

For insorting it as a permament filling, it must not be manipulated in the ordinary way, as, if it were put there one day, we might have the pleasure of seeing it drop out on the morrow. In the first place it should by preference be heated over hot water, instead of directly in the flame of a spirit lamp, for then the risk of over heating is prevented, and a more even temperature throughout the pieces obtained.

Then again, instead of being inserted in one large mass, big enough to fill the whole cavity, it should be used in small pieces, and each one carefully packed with appropriate plugger after the manner of plugging gold cylinders by hand pressure.

We thus see that each one of the filling materials in every day use, from gold to gutta-percha, possesses certain peculiar characteristics of its own which render its usage eminently advisable under a certain set of circumstances, and he who can best diagnose those circumstances, and choose his filling material accordingly, will be doing not only the best for his patients but practising dentistry on the soundest and most scientific principles ; but the very fact that we have not a preparation possessing in itself all the requirements of an ideal filling, will, let us hope, act as a stimulus to some ingenious and scientific minds to prosecute researches in the hopes of producing a substance containing in itself all the attributes which the term perfect filling demands. Should such an object ever be achieved it will prove an invalueble boon not only directly to the dental profession, but indirectly to the community at large. One thing I think we may safely prophesy, that such a substance will partake of the nature of a plastic filling.

Artificial Teeth from the Manufacturer.—There are those who like to go to the " fountain head " for their supplies ! and so we find in sundry places upon British soil the freedom-loving Englishman chooses to go to the " makers" for his teeth. What recks he whether or not the manufacturer understands the A.B.C. of Dental mechanical work. He consults his pocket and his daily paper, he finds he can get teeth for a guinea or two for which a non-advertising *bona-fide* dentist charges a higher price, and *hey presto* ! off he goes, gets his teeth " which looks very handsome," there is usually plenty of them ; and, well-a-day, he repents at leisure, for he soon finds his teeth will not fit, cannot masticate, and inflame his gums. The last state of that man is worse than the first.

British Journal of Dental Science.

LONDON, DECEMBER 1st, 1888.

THE PROTECTION OF DENTISTS AND THE B.D.A.

One of the claims put forward by the British Dental Association upon the support and suffrages of the dentists of this country, has always been that it would protect its members from the competition of unqualified practitioners. In protecting the members of the British Dental Association it would of course be protecting the profession at large, and hence it is said by its promoters and supporters, that all qualified men are bound to enrol themselves under its banners, and so increase its finances and powers of doing good. In a way this is the function of a trade protection society, grafted on what was regarded as a banding together of professional men, and by some is considered as a most undesirable function for any purely professional corporation to undertake. How far the Representative Board of the Association deem it as their duty. to institute prosecutions against those who have run amuck against the Dentists' Act, we can only learn by watching the policy they are at the present time pursuing, and we are bound to admit that the recent successful prosecution of the so called doctors who practice under the trading title of the American Dental Institute, seems to indicate that prosecution is still a prominent feature of the Dental Association programme. It is, of course, competent that any individual should initiate a prosecution under the Act, but then, it is also competent that any briefless barrister should one day ascend the woolsack, only the details to be gone through in either case are a little troublesome, and in the former very expensive. Under these circumstances it seems far better that the Association should pay the piper. A correspondent writing from Glasgow relates a state of things existing in that city which is certainly most calamitous. Mr. Thomson appears to have received scant courtesy at the hands of the President of the local branch of the Association, and certainly if our correspondent's statements are not capable of refutation, he has serious cause for complaint against the representative of the British Dental Association. We trust most sincerely that the obvious rudeness of which Mr. Thomson rightly complains has, ere this, been explained. Discourtesy especially towards a brother professional can never be excused, especially in one who in a sense must be regarded as a representative man and one in whom should be conspicuous the virtue of leading men. Unless we are misinformed, the method of leading adopted in the present instance, savoured more of kicking down stairs, a form of persuasion which, although establishing a temporary riddance of a troublesome companion is not judicious as a permanent means of relief. Taking the story as it reads, it is highly discreditable, and cannot but produce much friction and discord. It is a common complaint amongst provincials that their claims are very apt to be shelved when their requisitions are carried to the centre of the Association—London. They say that, the B.D.A. is Allah, and that London is his prophet. But we think that such allegations do only scant justice to the executive of the Association, it is no easy matter to weave the web and woof of such diverse interests as belong to dentists, into a harmonious pattern. Say what you will, there are many men who regard forceps and scaler, mallet and plugger, as simply instruments for transferring money from the pocket of their patients to their own. They laugh at professional ethics. look upon themselves as tradesmen and act accordingly. It is a thankless task to unite this type of person with the man of high culture and education, who loves to think himself a member of a learned profession, requiring the diagnostic acumen of the physician coupled with the skill and delicate tact of the surgeon ; or even to attempt to harmonise such men with yet another stamp of individual, who hates his calling, cries shame on the handicraft by which he lives, and when he leaves his dental rooms in the evening, poses among his admiring friends as anything rather than a dentist. Interests will clash, and most men save the very elect are guided by pelf and self. An association of dentists would be, indeed, phenomenal, if it steered clear of all internecine strife, but if its motto of being all things to all men is to be carried out, there must be a certain amount of give and take between it and those who deem themselves aggrieved. Under all circumstances it is easier to criticise than to avoid doing acts open to animadversion, so that it would be well before accusing the B.D.A. of neglect of its duty towards its provincial clients to see how far it is really striving to ameliorate their ills, and further, to remember that its powers are less widespreading than many seem to suppose. The gross rudeness attributed by Mr. Thomson to the functionary connected with the Association will do harm, but it can hardly be taken as having any other than a personal bearing. It will give us great pleasure to hear that the whole episode was the outcome of a moment of heat, and has been ended by an apology and explanation.

DEATH FROM INHALING CHLOROFORM FOR TOOTHACHE.—An inquest was held recently at Penge on the body of Florence Jones, who died during Sunday morning from inhaling camphorated chloroform ; she had been in the habit of inhaling it from a handkerchief for toothache. How many times have the public to be warned that chloroform, even in skilled hands, is dangerous, in those of the ignorant it is simply a means of self murder.

A VICTIM TO COCAINE.—A Swiss physician tells the story of a medical friend of his who has succumbed to the fatal allurements of cocaine. The victim began with morphine, which he eventually exchanged for cocaine. As usual, his first experiments were attended by increased vigour of mind and body. This, however, was soon followed by mental and nervous depression. After increased doses of the drug he experienced hallucinations, was compelled to walk round and round in circles, to endeavour to pick up needles where he knew none were to be found, and was at length left utterly sleepless and without appetite. To escape the fatal influence of the drug he gave up his practice and went as surgeon in a ship bound for the East. At length by means of long sea voyages he overcame his craving, and was restored to health; only, as he knew, to fall a victim to the poison once more on finding it accessible. Persistent indulgence in the drug resulted in one of the most terrible of deaths—exhaustion from tetanoid convulsions. And yet there are many dentists who are daily training their patients to become cocaine-maniacs.

THE PROPOSED NEW DENTAL HOSPITAL AND SCHOOL ACCOMODATION.—The directors of the Edinburgh Dental Hospital and School have been having negotiations with the Infirmary managers with a view to removing the institution to larger premises at No. 5 Lauriston Lane under arrangements which were reported in the *Scotsman* recently. The building which is proposed for the new premises is a self-contained house of four storeys, and contains at present on the ground floor four rooms, which had been used as dining-rooms, parlour, library, and kitchen, the last two of which had been built out from the sides of the house at a later period than the main structure. Of these rooms it is proposed to convert the dining-room, which is opposite the main entrance, into a cloak-room with lavatory accommodation for the surgeons and students. The parlour and library to the right of it will be formed into one room by the removal of the partition wall between them, and further enlarged by the addition to it of the passage from the vestibule to the library, and the room so formed, measuring 22 feet by 16 feet, is to be used as a patients' waiting-room, with the needful lavatory accommodation. The kitchen to the left of the cloak-room will be turned into a furnace-room for heating the building and supplying the hot water for the needs of institution. Behind the house an annexe will be erected in the garden, entered from the patients' waiting-room, and which is to be used as the "conservative" department. It is to be a large room, meas-uring 50 ft by 25ft., and well lighted from roof and sides. On the first floor there are three rooms, with which, under the new arrangements, it is not proposed to interfere. Of these, one will be used as an ordinary extracting room, and a second will be used for extractions and operations under anæsthetics. The third, a small apartment, will be used as an auxillary room for impression-taking in connection with the mechanical laboratory, which is on the floor above. Along with the mechanical laboratory on the third floor will be the board-room and museum, a handsome apartment, on the north side of the building, measuring 28 feet by 15 feet. To form this room two of the existing rooms will be made into one. The fourth or top flat of the building will be occupied as a house for the janitor. All the rooms will be fitted with the needful accessories, and the alterations, it is expected, will cost about £500.

A PROSECUTION UNDER THE DENTISTS ACT took place recently at Penrith. It was shown that the defendant was not on the Register, and was practising as a dentist; on the other hand, it did not appear that the prosecution was insituated on public grounds, while the defendant had been in practice with his two brothers, who were dead, but had been registered. The magistrates evidently considered the case a weak one, although the letter of the law had been broken, so they imposed a nominal fine of 2s. 6d., and costs. The Den tists' Act is too young yet for weak cases.

THE DATE OF THE INTRODUCTION OF THE TOOTH-BRUSH—The following very interesting quotations from *Notes and Queries* may amuse our readers. "Tooth Brushes (7th S. vi. 247, 292).—I think the teeth of the seventeenth century—to say nothing of those of earlier date—were cleansed, when they were cleansed, otherwise than by brushing. One of William Vaughan's 'Fifteen Directions to preserve Health' (1602) was :—

> "Picke and rub your teeth; and because I would not haue you to bestow much cost in making dentrifices for them; I will advertise you by foure rules of importance how to keepe your teeth white and vncorruyt, and also to haue a sweete breath. First wash well your mouth when you haue eaten your meat; secondly sleepe with your mouth somewhat open. Thirdly, spit out in the morning that which is gathered together that night in the throate: then take a linnen cloth and rub your teeth well within and without to take away the fumositics of the meat and the yellownesse of the teeth."

"Sleepe with your mouth somewhat open," forsooth! It has been reserved for a faddist of the present day to devise mechanical means to prevent this very thing; and who does not remember the outcry George Catlin uttered in his 'Shut your Mouth,' a book which ran through at least six editions? Nightmare, headache, toothache, rheumatism, dyspepsia, gout. bronchitis, quinsy, croup, asthma, rickets, diseases of the liver, heart, spine, and of "the whole of the nervous system from the brain to the toes may chiefly be attributed to this deadly and unnatural habit" of open-mouthed slumber, says the alarmist. But to revert to the seventeenth century. In the 'Booke of the Demeanor' (1619) Richard West enjoined:

Keep white thy teeth and wash thy mouth
With water pure and cleane,
And in that washing mannerly
Observe and keep a meane.

Reprints of Vaughan and Weste's works are to be found in that interesting publication of the Early English Text Society which contains 'The Babees Book.' There, too, one comes on 'Modus Cenandi' (Cotton MS. Titus, A xx., fol. 175, recto)—I do not know the date—"Englished literally," in which *dentes fricet* is rendered "Let him........brush his teeth," and is indexed "Teeth, brush 'em," though it may be questioned whether "rub 'em," would not have been more to the point. In our own exquisite time Dr. John Brown, author of 'Rab and his Friends,' has, unless I greatly mistake, written somewhat doubtfully concerning the benefit and necessity of tooth brushing in a little book on health, addressed to the working classes. ST. SWITHIN.

There appears to be no doubt of the recent introduction of tooth-brushes. I do not think the fact of a powder being mentioned in 1719 for the teeth proves that brushes were in use. The powder, like Lord Chesterfield's "Arquebusade Water," may have been used on a cloth or sponge, as appears to have been the custom in the first half of the last century, Prior to that the teeth appear to have been cleaned with pick-tooths only, and these were ordained to be made of lentisk wood. Dr. Johnson quotes from Mortimer's 'Husbandry' (1707) of this wood that it is "a beautiful evergreen, the mastick or gum of which is of use for the teeth or gums." Gargantua uses a young walnut tree, and Gymnast was employed in making toothpicks of lentisk. Both these woods take a highly ornamental polish, and toothpicks were worn in the hat by men, and in the hair, as pins, by ladies, and at this early period nothing else was done towards cleaning the teeth. In Higgins "Nomenclator" (1758), "Dentiscalpium ...*curedent,* a tooth-scraper or tooth-rake." *Curedent* is the Rabelaisian word for pick-tooth. H. C. HART.

Decker, in the 'Gull's Horn-Book,' 1609, gives the following suggestion to the coxcomb :— "After dinner you may then be seen for a turn or two to correct your teeth with some quill or silver instrument and to cleanse your gums with a wrought handkerchief." CONSTANCE RUSSELL.

Abstracts of British & Foreign Journals.

THE ODONTOGRAPHIC JOURNAL.

IRREGULARITIES.

By X. Y. Z.

In the irregularities timely and judicious extraction is essential. Probably if every child could be under the care of a competent dentist during dentition, regulation appliances would rarely be needed; but, unfortunately, such is not the case. The best time for treatment, everything considered, is, he thinks, the age of fifteen, though the time may vary according to the development and temperament of the child, ever having in mind that the earlier it is undertaken, the more easily it will be accomplished. But never undertake it until the tooth or teeth to be moved, and the anchor teeth, are fully erupted. It is a popular idea that it is too late after the twenty-first year to undertake cases of this kind. He believes there is no limit as to time. Of course, the older the patient, the longer will be the time required for the absorption and redeposition of bone. He quotes the case where the patient's age was thirty-five, and all things considered, it was most successful. After deciding that mechanical treatment is necessary, and before choosing any definite plan of operation, take three careful impressions of the opposing teeth; make good and correct models of the same, and give each a thin coat of sandarac varnish. Give one of these models to the patient, that he may judge of the improvement as the treatment progresses. On the back of the second, write the name and age of the patient, with the date. This one, after the articulation has been made, should be used for present study of the case and for future reference, and under no consideration should it be destroyed. He recommends that the old models be kept, as it is very interesting and instructive to occasionally look them over. Upon the third model construct the appliances desired. As to the method of treatment great care and judgment should be used. Keep the second model at hand to study. In deciding upon the forces to be used in correcting irregularities, the writer advises, 1st: That which will accomplish the work in the shortest possible time. 2nd: That causing the least annoyance to the patient both as regards comfort and appearance. One necessary cause of pain, and a very common one, is interrupted pressure. As long as moderate pressure is applied constantly, but little pain or soreness will ensue. But if the tooth or teeth from any cause, such as breaking or changing the appliance, should be allowed to spring back, and pressure be applied again, great pain and soreness will result, which may take days to control. Any method of procedure which necessitates the frequent removal of the appliance is defective. Avoid as far as possible the use of unsightly appliances. In the treatment of these cases, one or more of the following movements of the teeth must be accomplished: 1st: *Forward*, in the line of the arch. 2nd: *Backward*, in the line of the arch. 3rd: From *without*, into the line of the arch. 4th: From *within*, into the arch of the arch. 5th: *Partial rotation* in the socket. He asks how may these movements be accomplished most easily and quickly? Different contrivances have been brought out, the wedge, the lever, the inclined plane, the spring, the ligature (both silk and rubber), and the screw; each and all possessing peculiar advantages; success in the treatment of irregularities require a knowledge of their respective virtues. Of all those in use, probably no one has so little to recommend it as the inclined plane; this should be, and to all practical purposes is, obsolete. The one force containing the most to recommend it is the screw, by which more can be accomplished, if it is properly applied, than by any one of the others. It is simple and positive, enabling us to proceed with system and accuracy. The more simple and direct the application, the better it is. It is necessary to use but five of the most important appliances, variously modified: 1st: The *gripe* for drawing a tooth forward or backward in the line of the arch. 2nd: *loop skeleton plate* for drawing a tooth from without into the line of the arch. 3rd: The *jack screw* for pressing a tooth outward into the line of the arch. 4th: The *half loop* for partial rotation of the tooth in its socket. 5th: The *T screw* in connection with the *skeleton plate* where two teeth are to be drawn into line with partial rotation at the same time. In using the screw two points must be borne in mind, if you would be successful: *First*, the anchorage must be diffused over one or more teeth, so that sufficient power may be brought to bear directly upon the tooth or teeth we wish to move; and secondly, the appliance must be adapted so perfectly that there will be no slipping or lost motion.

The screw should be tightened as often as necessary. The time varying, but usually once in twenty-four hours. After the teeth are drawn into the desired position, and a proper occlusion secured, take another careful impression of the teeth from which, make a model, upon the back of which, write the patient's name, and time occupied in treatment. Give it a thin coat of sandarac varnish, and lay it away for future reference. After this, the teeth should be held in position by any of the usual methods (the skeleton plate preferred, as it possesses the advantage that it may be removed and cleansed at any time), until they are sufficiently firm in the socket to remain without support in their place. Remember, that unless a proper occlusion is secured, the teeth will not remain long in their new position after their support is removed, hence the necessity of a good occlusion. These five styles of the screw, any dentist with a little experience can readily make; the size, shape, and strength should be, of course, modified to suit the case. Of jack screws, he prefers the spindle shape, as it is quite as powerful and much more compact, and far more readily adapted to the use for which it is intended. He makes the screw out of Stubb's steel wire, the nut out of 20-carat gold, and the pipe, or base, of silver. It may be made of any size, the smallest he has yet made being three-eighths inch in length. In its use, it is nearly always best to employ, in connection with it, the skeleton plate, in which case no pipe is used. This form of the screw is one of the most useful of the five principles, and seems to be almost without limit in its application.

Manipulative Miscellany.

All instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

A NEW SIMPLIFIED FORM OF ORAL SPECULUM.

THE speculum is constructed out of stiff smooth German wire 3 mm. in diameter, neatly soldered together.

It consists of two parts. A long portion which has a gentle double curve and tapers slightly towards the end, a short portion bent sharply like a hook on the former. The long portion acts as a retractor for the cheek, and owing to its tapering form can be used for any sized mouth. The second portion can be employed, to depress the lower lip so as to expose the lower teeth or as a retractor for the angle of the mouth.

This speculum is simple and capable of a variety of uses, it is also easily cleansed.

BALL-BEARING READY ENGINE.

THE following explanation has been sent by Mr. Lepper in reference to the above Engine described in our last issue.

"Referring to the last two sentences in your notice (p.p. 1058-9, B. J. D. S. of 15th Nov., 1888) of my lately introduced Ball-Bearing Engine, I ask leave to point out that the slightly heavier appearance given to the Engine in the driving wheel portion is scarcely due to the small wheel controlling the position of the upright but, and necessarily so, to the addition of the Ball-Bearings the use of which you are otherwise good enough to commend. A glance at either one of the Engines, or the drawing you printed will demonstrate the above, the actual effects being, that from centre of driving wheel to outside of bearing now measures 2⅞ inches instead of 2 inches, as was the case in the older Engine without Ball-Bearings; while the increase in weight, including both improvements and extra strength advisable in forked part of stand, is barely 2 lbs. Whether the result is to give a somewhat cumbersome appearance, remains, of course, a matter of opinion. The small wheel fixing the position of the upright is 2½ in. diameter and stands out ¾in., the idea being that the operator could grasp it readily and without trouble. Where desired, this wheel, will, of course, be made smaller and closer to the upright."

Reports of Societies.

STUDENTS' SOCIETY. THE DENTAL HOSPITAL OF LONDON.

ORDINARY GENERAL MEETING, Held November 12th, 1888.

WILLIAM HERN, Esq., *President*,
In the Chair.

The Minutes of the previous Meeting were read and confirmed.

The President announced that the Council had nominated Messrs. Porter, Black, and Hoffman to the vacancies on the Council caused by the resignation of Messrs. Bates, Horne, and Washbourn. The nomination was unanimously confirmed by the Meeting.

Messrs. C. F. Badcock, W. D. Moon, E. H. L. Briault, M. Woolf, and G. Hern having signed the Obligation Book, were formally admitted to membership by the President.

Messrs. H. L. Hayman and Alan Goodridge were proposed by Mr. Rilot, seconded by Mr. Porter.

The following gentlemen were balloted for, and elected members of the Society:—Messrs. W. May, A. C. Gask, K. Schelling, H. Dormer, C. Preston, F. Lewis, F. Breese, P. Reading, R. M. C. Harrison, J. A. Rogers, C. E. Bromley, H. A. Forsyth, F. G. Hall, W. H. Davies, P. Arliss, T. White, H. Phillips, W. H. Holford, H. May, A. C. Day, and Bailey King.

On Casual Communications being called, Mr. A. R. Colyer brought forward an interesting series of models shewing in various degrees absence of the permanent dentition. Five cases were shown occurring in two families; no history could be found to account in any way for the abnormality; in two of the cases internal strabismus was noticed. He also showed models illustrating (1) the separation of the upper central incisors from excessive development of the frœnum of the lip, and (2) an impinging wisdom tooth causing decay of the second molar.

Mr. Woolf spoke of a case which had occurred to him in which the application of nitric acid to the exposed surface of a pulp had caused its complete necrosis, and asked for an explanation of the cause.

The President, and Messrs. Harsant and Rilot made some remarks on the cases brought forward.

The President then called on Mr. F. C. Porter for his paper on "Plastic Fillings." (See page 1092.)

The discussion was opened by Mr. Woolf, who advocated the use of Gold Crowns in preference to building up teeth with amalgams.

Mr. Dunlop differed from Mr. Porter in his statement that thin enamel walls could be supported by Amalgam Fillings. He considered that owing to the shrinkage of the amalgam, the wall was left unsupported and liable to break down. He advocated the use of a thin strip of Rubber Dam for polishing off approximal surfaces of Amalgams immediately after insertion. He also denied Mr. Porter's statement that Gutta Percha in its unprepared state was white.

Mr. A. R. Colyer thought Amalgam was of great use in approximal cavities with very deep cervical edges, as they could be satisfactorily finished off in that position with less trouble and pain than gold fillings. He considered that many of the failures in the use of white cements was due to carelessness in mixing and he advocated the use of the agate burnisher for polishing off.

Mr. Seymour also laid great stress on the care that should be used in mixing osteos. In combination gutta-percha and osteo fillings he had found great difficulty in obtaining a thoroughly satisfactory finish.

Mr. J. P. Oliver advocated the use of some varnish, as mastich or copal ether over osteos, in order to give them time to set thoroughly before coming in contact with saliva.

Mr. Robinson thought the pitted cement fillings so frequently seen were due in great measure to exposure of the powder to the air, as there would be a great tendency for the powder, being hygroscopic, to absorb water from the air. In working interstitial amalgam fillings, he strongly advocated leaving in the matrix till the next visit of the patient in order to avoid the chance of the filling being shifted by mastication.

Mr. Dolamore objected to the vagueness of the paper, and would have preferred a detailed investigation on a smaller field. He spoke of the different preparations of gutta-percha and their relative uses, and in the combination of gutta-percha and cements, he advocated the use of a much smaller amount of the former than usually employed. He did not care for the agate burnisher.

Mr. Baldwin said that the principle underlying the insertion of a good amalgam filling was, that it should have equal pressure on all sides, that is, that the cavity must have four walls and a floor. If one wall were absent it must be replaced by a matrix. In this way perfectly satisfactory fillings can be obtained, the colour being then the chief disadvantage.

Mr. Preedy spoke of the method of amalgam filling advocated by Mr. Amos Kirby, viz., the use of moist amalgam below, and very dry amalgam on the top, and also of the use of a plug of amadou for condensing it.

Mr. Knowles said that in removing his matrices he invariably pulled them towards the lingual surface, as by this means if any shifting took place it would be from the labial edge, which is easy of access. Of amalgams, he preferred the "Standard," and of cements, "Fossiline"; he found Weston's Cement very difficult to work.

Mr. Harsant spoke of the use of Chloroform for finishing off gutta-percha fillings. He doubted whether amalgam and gold were a good combination even in interstitial cavities as advocated by Mr. Colyer. In practice he had found Weston's Cement very gritty, and thought this was more so than it used to be.

The President then closed the discussion by calling upon Mr. Porter to reply, which he did briefly.

The President then said that it only remained for him to thank Mr. Porter for his interesting paper, and Messrs. A. R. Colyer and Woolf for their Casual Communications, and to announce that the next meeting of the Society would be held on Monday, Dec. 10th, when Mr. Harsant would read a paper on "Fractures of the Jaws and their Treatment," and not "Micro-organisms," as previously announced.

The meeting then adjourned.

THE FIFTH, SIXTH, SEVENTH, AND EIGHTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE union convention of the 5th, 6th, 7th, and 8th district Dental Societies of the State of New York, was held in the auditorium of the Leland Hotel, Syracuse, N. Y., Oct. 24, 25, and 26. The meeting was called to order at 2 p. m. President B. T. Mason of the 5th district presiding.

Geo. B. Spaulding, D. D. opened the session with prayer.

Pres. Mason then read an address of welcome, in which he referred to the progress of our profession, and expressed great satisfaction that so many distinguished guests had joined with us to make the meeting one of great interest.

The response was given by Dr. W. C. Barrett, of Buffalo, N.Y., who spoke of the great benefits of our societies, as the profession had been dug from the slimy pit. He spoke of the ties which bind the members together by these union meetings, the great pleasure of meeting with dentists of eminence from abroad, and as this was the first union meeting ever held in Syracuse, it would be looked back to with pleasure, and all would be fully paid by the great spread and hospitality of the Syracuse dentists.

Dr. I. C. Curtis, of Fulton, gave an essay on "Chemistry, an Important Factor in Dental Education," in which he spoke of the great importance of chemistry to the dentist.

The paper was discussed by Drs. Barrett, Dwinelle, Brophy, Wilmott and Darby.

EVENING SESSION, FIRST DAY.

President C. T. Howard, of 7th district. called the meeting to order.

Dr. J. Van Duyn, of Syracuse University, read a very interesting paper on "The Abnormity of the Dentist's Eye" in which the essayist gave some very excellent advice as to the care of the eye, as the dentists most valuable instrument, the paper being discussed by Drs. Beers, Marshall, Willmott, Brophy and Dwinelle.

Dr. C. S. Butler, of Buffalo, N. Y., read an essay on "The Pathological Condition of the Mouth due to Artificial Dentures." He stated whenever inserting artificial dentures into the oral cavity, it is a foreign body, also a poor conductor of thermal changes (gold and continuous gum excepted) and irritating the mucous membrane, thus producing more or less of a pathological condition. The writer also states, the pressure on outside of plate, when air was all excluded from under plate, was 15 lbs. to the sq. inch, and this pressure should be equal at all points. The plates also excluded the saliva from coming in contact with mucous membrane in the roof of the mouth thereby preventing health and vigour to the membrane. He also stated that vermillion was not the cause of trouble, as was once supposed, as it is the most insoluble of all mercurial salts, and that it was caused by mechanical irritation; he further stated that Dr. Black had found fungi on surface of palates due to the irregularities, and that cleanliness is the only remedy.

The discussion was opened by Dr. Carroll, followed by Drs. Brockway, Barrett and Palmer.

Dr. T. B. Darby, Elmira, N. Y., read an essay on "Mouth Breathing, Cause, Effect, Treatment." He set forth good advice, from a case of actual experience in his own family, and spoke of the structure of the nasal passage so as to exclude all dust and in warming the air in its passage to the lungs, and closed with the moral—"Shut your mouth."

Morning of the 2nd day was devoted to clinical work.

Second day 2.20 p.m. the president of the 8th district, Dr. F. E. Howard, Buffalo, N. Y., called the meeting to order.

Dr. W. L. Rhein, of N. Y. City, presented his second essay on "Studies of Pyorrhœa Alveolaris" of which only the process of treatment and not the etiology was spoken of. Tannin and glycerine was recommended for mild cases where the pockets were not very deep; it will be found of great benefit and very soothing to the parts after the application of bichloride of mercury, and peroxide of hydrogen in their order.

Drs. Barrett and Dwinelle discussed the paper.

Nathan Jacobson, M.D., Syracuse, N.Y., read a very interesting paper on "The Early Diagnosis and Treatment of Tumours of the Jaw," which was instructive, and enjoyed by all present. The Dr. spoke of the training the dentist should receive, that he might properly diagnose all tumours with certainty, as he (the dentist) was the first to notice the growth, or any abnormal condition of the oral cavity; and also that all tumours if taken in time might with certainty be removed, but if the patient indulged in procrastination, all tumours were sure to kill.

Dr. Brophy very ably discussed the paper.

Papers on "Dental Education" were read by Dr. Sudduth of Philadelphia, Pa., and Dr. Darby of the same city, Drs. Brophy and Marshall of Chicago, Ill., and Dr. Willmott of Toronto, Canada.

"Incidents of Office Practice." Dr. Barrett opened the subject by recommending very highly Dr. Taggart's disk maker (corundum) as a very useful instrument, and one that would more than pay for itself in a short time. The engine disks can be made from old corundum wheels that have either been broken, or used until too small for the laboratory lathe. He also exhibited some ancient specimens of bridge work, 750 B.C., probably the oldest specimens of dentistry in the world.

Dr. A. P. Southwick gave his experience in vulcanizing and copper amalgam. He stated one great mistake the dentists were now making, was using too much heat, as it ruined the properties of the rubber. Cases should not be heated above 280 or 285 degrees. Less heat and longer time to vulcanize. The Dr. thought there was too much of a tendency to rush the work regardless of the result. His report of copper amalgam was everything that could be desired from a plastic material. He uses pure copper and mercury.

Dr. Walker, Owego, N.Y., also spoke in high terms of copper amalgam.

SECOND DAY, A.M. CLINICS.

Dr. J. S. Marshall extracted roots by the aid of cocaine, using 4 per cent. solution, and after injecting 5 minims on buccal, and 5 minims on lingual surface, a lapse of two minutes was allowed before the operation was begun. The patient expressed delight at the success of the operation.

Dr. C. W. Stanton demonstrated the use of nitrous oxide gas as an obtunder, in excavating sensitive cavities.

Dr. Low demonstrated immediate root filling.

Dr. G. H. Butler attached a porcelain crown on upper left cuspid for a young lady.

Dr. W. C. Stewart contoured lower molar with kearsing gold by aid of electric mallet. Opportunity was had for examining a tooth implanted by Dr. Younger two years previously.

Dr. C. C. Carroll demonstrated his process of aluminium base plates, which was very instructive. The Dr. claims the iron and silica are removed from the aluminium of commerce, thus producing the pure metal, and reducing the shrinkage to $\frac{1}{10}$ of line to the inch, while commercial aluminium is one line to the inch. The work is very pretty and light, and much is hoped from it in the future. Certainly the Dr. deserves great credit for his untiring efforts in this direction.

Friday was devoted to unfinished business, and the society adjourned at noon to meet in Elmira, N.Y., next October, in connection with the 6th district society.

On Thursday evening, a Banquet was given at the Leland Hotel, 195 dentists being present.

J. E. Cummings, D.D.S., M.D.S.

Syracuse, N.Y.

THE ODONTOLOGICAL SOCIETY OF MANCHESTER.

The Manchester Odontological Society held the first meeting of its fourth session at the Grand Hotel, Aytown Street, Manchester, on the ninth ultimo.

The following gentlemen are the office bearers for the ensuing year.

President: L. Dreschfield, L.D.S., Manchester.

Vice-Presidents: T. Renshaw, L.D.S., Rochdale; P. Betts, D.D.S., Manchester.

Treasurer: Parsons Shaw, D.D.S., Manchester.

Council: H. Campion, M.R.C.S., Manchester; P. Headridge, L.D.S., Manchester; J. H. Molloy, L.D.S., Manchester; N. Smithard, L.D.S., Manchester; H. Planch, L.D.S., Man-Geo. G. Campion, L.D.S., Manchester.

Secretaries: G. N. Skipp, L.D.S., (Council), Manchester. W. Simms, L.D.S. (Society).

The Dental Manufacturing Company gave an excellent exhibition of Dental Instruments and Novelties.

The President read an Inaugural Address.

Dental News.

ACTION FOR RECOVERY OF FEES BY A DENTIST.

Before Judge Chalmers, an action was brought in the County Court Birmingham, on the 31st of October, by Mr. George Edwards, Mole House, Stratford Road, surgeon dentist, against Henry Jones, 180, Mosely Road, money lender, for professional services to the defendant's son. Mr. Cross (Buller, Bickley and Cross) appeared for plaintiff, and Mr.

Lowe for defendant. Plaintiff said he prepared five teeth for stopping, and advised as to certain artificial teeth required, for which he claimed £1. 1s. In support of plaintiffs evidence, Mr. Charles Sims, L.D.S. R.C.S., professor of dental surgery, Queen's College, was called, and stated he considered the charges of plaintiff very moderate, and much less than those usually made. For the defence, Henry Jones, son of defendant (and for whom the work had been done) was called, and stated that he went to plaintiff's house and was there an hour, which time was chiefly occupied in conversation, and that plaintiff never put an instrument into his mouth, also that he saw no instruments at all. His Honour at this period stopped the case, and without hesitation gave judgment for plaintiff with costs, thereby intimating that he believed plaintiffs evidence as a correct solution of the question of facts.

ARTIFICIAL TEETH FROM THE MANUFACTURER.

Arneman v. Yarwood.—The plaintiff, who is a manufacturer of artificial teeth carrying on business in Sherwood-street, Nottingham, sued the defendant, a shopkeeper of Arkwright-street, for £1. 2s. 6d., balance of account alleged to be due. Plaintiff supplied the defendant with a set of false teeth two years ago the price being £2. 2s. 6d., but he only paid £1. —Defendant stated that in an advertisement the plaintiff guaranteed his teeth for 10 years, but the set he bought did not last ten weeks.—Plaintiff: Open your mouth and let us see if you have not got my teeth in your mouth.—Defendant produced the teeth supplied by the plaintiff from his pocket, and said those in his mouth were bought from Mr. Ward, and they were paid for.—His Honour gave a verdict for the defendant.—Plaintiff asked if he could appeal, but his Honour made no reply.

Arneman v. Wilson.—The same plaintiff sued Thomas Wilson, of Colwick, for £1. 2s. 6d., balance of account, a sovereign having been paid, as in the last case.—Defendant said that the teeth supplied by the plaintiff did not fit comfortably. He could not eat with them.—His Honour: Why did you not go to the plaintiff.—Defendant: I went several times to him, but he had always the same tale, "You must persevere and your gums will harden. I kept them on three days and I suffered purgatory. (Laughter.) I have paid a pound on account, and I wish I had not paid that.—His Honour: The top part you can wear apparently.—Defendant: To a certain extent.—His Honour: You have them in now.—Defendant: Yes.—His Honour: They look very handsome. (Laughter.) —Eventually a verdict was given for the defendant, and as the plaintiff was leaving the witness box he remarked: "All right, I know I never shall have justice in this court."

VACANCIES.

Victoria Dental Hospital, 98, Grosvenor Street, C. on M., Manchester. There are vacancies on the Dental Staff. Applications to be made on or before the 12th January, 1889, to the Secretary.

APPOINTMENT.

Mr. Percy A. Linnel, L.D.S., Eng., has been appointed House Surgeon to the Victoria Dental Hospital, Manchester, Vice C. H. Smale resigned.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

VACUUM CAVITIES—A NEW IDEA.

To the Editor of the British Journal of Dental Science.

SIR,—On page 1005 of your issue for Nov 1st. is described a method of making "cohesion forms" on rubber plates by driving small gimppins into the plaster of the model and covering them with liquid silex. This may succeed in some cases, where the plaster is soft enough to admit of driving pins in; but in the better and finer qualities of plaster, these would be both difficult and a very great liability to chip the model. The same result can be attained in any rubber plate, after it is made in the usual way, by the use of either an oval cavity burr or a round nosed drill used in the engine or lathe, and this can be done on any plate after it has been worn, if the adhesion is insufficient. The pattern for the position of the cavities can be dotted on the plate with ink and the whole process can be completed in a few minutes.

Yours &c.,

THOS. FLETCHER.

Warrington.

British Journal of Dental Science.

No. 502. LONDON, DEC. 15, 1888. Vol. XXXI.

CERTAIN POINTS CONNECTED WITH THE STRUCTURE OF DENTINE.*

By F. J. Bennett, Esq., M.R.C.S., L.D.S.

Mr. President and Gentlemen,

In one of the numerous and interesting contributions to molecular physics made by Dr. W. Ord† in March, 1885, he states that it is possible to etch or erode the surface of pieces of ivory and mother-of-pearl by immersing them for certain periods in a solution of subcarbonate of potash in glycerine.

A year previously I had attempted to extend some of the well-known experiments of Rainey on the formation and disintegration of calculi, with a view to obtaining artificial absorption and deposition in teeth and bones. Dr. Ord's paper, therefore, came as a welcome addition to my knowledge of the subject.

In order to apply this method to the dental tissues, I commenced various experiments; first, with subcarbonate of potash in glycerine, and having satisfied myself of the efficiency of this reagent, I was led to inquire, how far this action might extend to other carbonates. Selecting, therefore, the bicarbonate of soda as a closely-allied salt, I submitted specimens to a solution of this alkali in glycerine. At the same time, in order further to check this action, specimens were placed in pure glycerine alone. To my surprise, in both cases the specimens were acted upon, and with such similarity that I was lead to conclude the real active agent in the decomposition must be glycerine alone. Since which time I have used this substance exclusively.

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* A paper read before the Odontologidal Society of Great Britain.

† Read before the Royal Microscopical Society.

I wish to be understood to say merely, that all the appearances I observed in the specimens in subcarbonate of potash in glycerine I also observed in those submitted to bicarbonate of soda in glycerine, and to glycerine alone. There may at the same time have been differences in other respects which I did not observe.

My method of procedure was as follows :—

I. Freshly extracted teeth were ground and polished sufficiently thin to allow of microscopical examination ; these were suspended in pure glycerine, or one of the above compounds for various periods of from one to six months, or longer ; they were then washed and mounted in glycerine, for examination.

II. Freshly extracted teeth were immersed whole in pure glycerine for similar periods, then ground, polished, and mounted as before.

III. Whole teeth were placed in extremely dilute solutions of glycerine, the strength of which was daily increased until pure glycerine was used ; the specimens were then kept in this for one or two months.

It is, however, with the effects of glycerine upon dentine that I propose to deal now.

Examined with the naked eye there was neither obvious loss of tissue or loss of rigidity, the chief feature being the increased translucency, almost transparency, of the dentine.

On examining one of these sections under the microscope, taken from a young tooth, longitudinal to and including the pulp cavity, but without the pulp tissue, and with a low power, no very conspicuous change was noticeable on the surface of the dentine until the margin of the pulp cavity was reached ; the dentine bordering this region presented a fringed appearance and was slightly laminated. Under a higher power ($\frac{1}{4}$ in. or $\frac{1}{8}$ in.) this appearance proved to be due to the dentinal tubes in this situation having lost their surrounding intertubular tissue, which left them clearly defined, but this removal of the matrix had not completely freed the tubes ; their course appearing interrupted at regular intervals by layers of membrane, having a general direction paralled to the surface of the pulp.

The layers of membrane bore a general resemblance to that seen in interglobular dentine ; in this case, however, circular apertures, and not solid globules, occupied the surface of the membrane; oval spaces were also found between the layers of membrane.

Through these apertures could be seen the dentinal tubes crossing from one layer of membrane to another and completely freed of their intertubular substance. As in interglobular dentine also, the tubes appeared to penetrate, or arise from the upper and under surface of the membrane. In places also the tubes distinctly arose as processes from the margins of the membrane in such a manner as to produce a strong resemblance to irregular cells and processes. A characteristic feature, moreover, was the regularity with which the tubes were measured off into short lengths by the crossing of the membrane.

The number of membranous layers thus exposed, I found to vary not so much with the time the specimen had been immersed before mounting, but rather with the length of time it had been mounted; for it was characteristic that if a drop of glycerine were added beneath the cover glass from time to time, the specimen continued to be acted upon indefinitely. In this way, fresh layers of membrane and additional lengths of tubes freed from intertubular tissue, could be brought into view.

I am of opinion, however, that in other respects these specimens are best examined early, and that many apparently contradictory and anomalous appearances, are the result of the specimens being either mounted too long, or having been suffered to come in contact with the air, when they are apt to become distorted and unreliable.

In some places portions had become torn, bent, or completely detached; in the latter case, the tubes were always broken off in regular lengths and bounded at one or both extremities by portions of the membrane.

Again, in certain places portions of one layer of the membrane dipped down to form part of the layer beneath, and often in such a way as to include oval spaces through which the tubes could be seen stretching across as before described.

Having become familiar with the various appearances assumed by the membranous layers as seen in profile, I selected a specimen presenting to view a continuous surface of the young layer of dentine.

The section taken from the anterior fang of a lower molar, long immersed in glycerine, offered a fairly flat surface parallel to the pulp; after grinding away the pulp tissue itself, and mounting, the layers could be well studied.

In the centre of the specimen the dentinal tubes were seen directly cut across; as the sides were approached they became gradually more oblique. Here, therefore, almost every variety was exhibited in the angle at which the membranes could be seen.

Besides the appearance of layer succeeding layer before described, over large areas scattered cells appeared to have taken the place of the membrane. These cells were seen in every variety of position, and were generally of an elongated stellate shape, tubes arising from the margins as processes and others joining the cell bodies from adjoining cells, thus presenting fragments as it were of the layers. These were best seen where the dentinal tubes were oblique in direction; from this point to where the tubes were cut directly across, there was presented a curious appearance, at first very puzzling. The uniform distribution of the dentinal tubes appeared by little gaps as though they had been pushed aside. A careful examiuation over an extended area led me to regard these apparent cells as similar in nature to those seen at the margins and other parts of the specimens, where they presented the more familiar aspect of stellate cells. The sharp well-defined margin of the cells seen elsewhere was certainly absent, still there was a strong analogy between them.

I believe those who are familiar with this curious displaced appearance of the dentinal tubes would be reminded of similar ones seen in the fangs of teeth cut in longitudinal section to one side of the pulp cavity; in such the dentinal tubes are given off in brushes and radiate in all directions, leaving what would appear as gaps here and there. I consider they are, in this situation also, indications of the cell structures I have described.

In connection with the appearances of membranes in the region of the pulp cavity, I may remind you that long ago it was pointed out by Salter and others, that on an examination of the interior of the cap of forming dentine, where this was found thin enough for microscopical purposes, there was revealed an appearance of structure similar in its relations to interglobular layers of dentine. In these parts I found the strongest resemblance to the membranous layers I have described; in places there was in this interglobular layer also a similar resemblance to individual cells. This I regard as strong confirmatory evidence of the effect of glycerine being at least not destructive in its action, since it reveals appearances so exactly resembling natural ones.

In all the specimens I have examined which have been submitted to the action of glycerine, or either of the before-named compounds, I have never failed in finding these appearances in the dentine bordering the pulp cavity, whatever direction the section might take and so long as the primary dentine was forming.

In other parts of the dentine, away from the region of the pulp cavity, for example, where a crack had occurred, somewhat similar appearances have been seen, but hardly with sufficient constancy or clearness to make them very reliable.

From the appearances which these specimens presented, it was manifest that the glycerine had acted in a selective manner, removing certain portions of the tissue only.

Various explanations might be given for these appearances :—

First, it might be assumed that the membranes merely represented a part of the matrix itself, which possessed a greater power of resisting the action of the glycerine than the rest, a mere transitional stage or phase in the calcification of the matrix ; it might further be assumed that the surface of the membrane itself presented unequal stages of calcification, and thus also offered a variable power of resistance to the glycerine, so that portions of it had become removed, leaving behind the circular apertures.

If this were true it might fairly accord with the theory of globular calcification in dentine. The lime salts being deposited in the animal basis and aggregrating into globular masses, leaving portions of the animal basis between the spheres unimpregnated with lime ; the glycerine, acting only upon those parts of the animal basis which had been thus impregnated with lime salts, had left a membranous-looking substance with circular apertures behind.

This explanation might be even strengthened by the fact that the effect of submitting interglobular dentine to the action of glycerine, is to bring out extensively and clearly, the membranes which surround the globules, indeed, they look more like membranes with flat circular spaces.

Again, it might be considered that the glycerine had produced separation of the layers of the matrix, through the unequal expansion or contraction of certain parts. Upon this point, however, Dr. Lionel Beale, who has specially studied the action of glycerine upon the tissues, has spoken very positively; he says that all tissues, both hard and soft, neither shrink nor swell in the strongest glycerine, if only the glycerine be first diluted and gradually increased in strength. As previously mentioned, this plan has been adopted by me in my later specimens, and so far as it relates to the parts just described, the appearances have not differed in the smallest degree.

In order, however, to test the expansion of a substance almost identical in nature with the animal basis of dentine, I immersed a strip of gelatine in glycerine for some weeks, and a strip of gelatine was also immersed in water, each being one inch square. The gelatine in glycerine was found at the end of this period of exactly the same measurement as at the beginning, that in water, however, after a similar period, having softened and swollen largely in all directions.

I think, therefore, from the general uniformity in the appearances and their resemblance to natural structures found in various parts of dentine, we should be wrong in considering them as artificial productions.

A third assumption would be to regard these appearances as evidence of cell structure; indeed, a careful and unbiassed examination of the layers of membrane, will reveal in many places a distinct resemblance to irregularly shaped cells and processes, as I have before described; moreover, as will presently be shown in secondary dentine, the appearances of interglobular structure, and of cell structure, are constantly to be seen passing from one to the other without any broad or well-marked distinction. According to this view, therefore, the spaces must be regarded as intercellular in nature.

I will now proceed to describe a part of dentine where there is much variety exhibited in the degree to which calcification occurs, namely, in the calcified pulps of old teeth. Not only do the effects of glycerine show themselves well in these situations, but from the fact, which is well known, that it is possible to preserve in ground and polished specimens, both the dentine and parts of the semi-calcified pulp, one is able to obtain specimens showing cell structure and other tissue, in sections ground and mounted directly in Canada balsam, which serve well as a standard of comparison by which to judge of the distorting effects, if any, of specimens from a similar situation, which have been submitted to the action of glycerine.

In such old teeth, the outline of the original pulp cavity is usually indicated by the abrupt termination of the regularly formed tubes of the primary dentine. This is generally succeeded by a layer of almost complete calcification. Internal to this, is the toughened and transformed pulp itself, with its offshoots passing between, and among, the calcified masses which occupy the centre of the cavity.

Wherever the pulp is in contact with the formed dentine, well defined cells are present, forming a somewhat festooned outline, and with the processes directed towards the point of calcification, these cells, which are osteodentinal cells, may be traced either as dark opaque bodies or as faint translucent ones here and there in the calcified tissue itself. The arms and offshoots of the pulp also present a reticulate structure. These appearances, which are all to be recognised in specimens which have merely been ground and mounted in Canada balsam, are seen in such but obscurely, from the obstruction which is offered by the calcified intercellular substance. Similar specimens submitted to glycerine bring out these structures with great clearness, by the removal of this obscuring ground substance. The layers of cells no longer border the pulp merely, but now are seen extensively traversing the translucent area, reducing it to a cell structure which may be traced outwards until the cells and processes join the primary dentine itself. The surface of the pulp also now presents circular apertures and contours much resembling patches of interglobular dentine. These appearances, which may be constantly compared with the specimens in balsam, show not the slightest trace of distortion in any part. The effort of the glycerine being merely that of removing the calcified portions, ahd bringing into view the parts which underlie them.

Having thus pointed out the most obvious appearances of dentine acted on by glycerine, and the remarkable structures which it brings to light, it would be proper next to describe the appearances of specimens in which the dental pulp is also present. This, however, I will reserve for another occasion, as likewise also, the consideration of the appearances of enamel under glycerine, in order that I may add a word with regard to the effects of this reagent on the cementum.

This tissue, as is natural from its containing the smallest proportion of lime salts of any of the hard structures of the teeth, was the one most completely affected by glycerine, so thoroughly, indeed, that almost every trace of it could be removed by absorption. The naked eye appearances also, were more marked in this tissue under glycerine or its compounds than elsewhere. Whole teeth, which had been immersed for some months, presented a dark, dead appearance, sometimes with irregular whitish opaque patches, which resembled the porous light coloured cementum affected with chronic inflammation, and were doubtless indicative of a loss of density. The absorption, however, was usually most visible in specimens which had been ground and mounted for some time.

Microscopically examined, the irregular outline when it occurred marked the extent of the loss of substance, In some cases absorption showed no disposition to follow the order of its deposition in layers, removing the whole of one layer, that is to say, before proceeding to the next. It appeared, however, generally to commence at the peripheral margin ; in some specimens also the manner appeared such as to assume the gnawed and bitten appearance of natural absorption.

Usually the lacunæ were clearly and shapely defined, often appearing to stand somewhat in relief, as though the surface of the surrounding matrix had been slightly removed. The form of the lacunæ was often found to undergo no change in shape, even at the point where they disappeared in the surrounding absorption. In certain cases, however, different parts of the interior appeared to be simultaneously attacked by absorption, in which case the appearance of channels, not unlike those found in natural absorption, were present, in the neighbourhood of which, and closely connected with them, were very large lacunæ. The canaliculi and their finer branches could be traced to a greater distance than is usual in ordinary specimens.

Briefly to summarize the results of this investigation, first, it has established the fact that glycerine is capable under certain conditions of decomposing the hard tissues of the teeth, and that it probably does so by the removal of the intercellular substance or matrix, where it exists in a certain state of density. Thus in the cementum, the least dense of the three tissues, it is most active, the cells being loosely united are unable to hold together, and disappear with the surrounding decalcification. In the dentine, a tissue which there is reason to believe increases in density in the order of its deposition, the younger layers are chiefly affected. In this situa tion the dentinal tubes are left standing, partly from their rigidity, and partly from the support afforded by the membranes or layers of cells.

I need hardly point out, in conclusion, that beyond furnishing us with a new and valuable reagent wherewith to study the tissues, and furnish fresh data from which to reconcider certain points in the structure of dentine and cement, there is that other aspect, in which glycerine, from the manner of its absorption of the tissues artificially, may lead a step onwards, to a better understanding of complex and hidden methods employed by Nature herself.

OPERATION FOR THE TREATMENT OF ANCHYLOSIS OF THE JAW.—At a recent meeting of the Medical Society Mr. Herbert Allingham showed the case of a boy, aged seven, who fell upon the front of his chin from a height of about ten feet. On examination some months later, he could only open the mouth enough to admit the tip of the little finger, and mastication caused great pain in the right temporo-maxillary joint. After repeatedly forcing open the jaw under anæsthetics with no satisfactory result, he excised the condyle and neck in the following manner. An incision was made over and along the zygoma or about two inches, and downwards along the posterior margin of the jaw for the same distance. The skin was dissected downwards off the parotid fascia, and this fascia and the masseter were then divided from the lower border of the zygoma and pushed down so that the facial nerve and parotid gland were left uncut. When the muscles had been separated to the same extent as the skin, a small Adams's saw was introduced, and the neck of the jaw divided as far as possible downwards and backwards, the cut being completed with forceps. The condyle was so firmly ankylosed that it required an elevator to force it from the socket. After its removal the superficial parts were replaced, an antiseptic dressing applied, and the patient made an uninterrupted recovery. The operation was done a year ago, and movement was perfect at the present time.

British Journal of Dental Science.

LONDON, DECEMBER 15th, 1888.

UNQUALIFIED AMERICANS PRACTISING DENTISTRY.

A very decided counterblast was given by the Chairman at the recent dinner in connection with the London School of Dental Surgery. "Now, however, we are brought face to face with another class of pretenders or charlatans: men calling themselves 'American Dentists'" and so on. These gentry are graduates (save the mark!) of some of the American Colleges which are a black spot upon the educational system of America, where persons can obtain a D.D.S. after a merely perfunctory examination. Dentistry is Dentistry by whomsoever it may be practised: Art and Science are, as Mr. Smith Turner very rightly remarked "cosmopolitan," so that it is really an absurdity to speak of "American dentistry." Of course, there are very many Americans who are quite first-rate dentists, but this does not in any way invalidate our position; they do not practice a distinct art from that which first-rate English workers follow, and those who assert the contrary simply prove their ignorance of dentistry as practised in this country. There are at the present time very many Americans practising dentistry in the metropolis and provincial towns of the United Kingdom, some are experts and hold reputable degrees from really *bona fide* American Colleges such as Harvard or Michigan, and are competent to practise legally by virtue of these degrees, but there are also those who practise without any registrable diploma and so are offenders against the laws of our land. An attempt has been made both on this and on the other side of the Atlantic to attract sympathy for such gentry by turning to bye issues. It is said, "Oh, look at the first-rate work the 'American dentists' (!) do!" and it is urged again that degrees admitted as reputable in the United States ought to be acknowledged here. Let us take the last contention first. It is soon disposed of. While the law stands as it does at present, no alien ought to be allowed to contravene its enactments, and it is shameful that Englishmen can be found to cover the misdemeanants by allowing them to trade under the protection of a registrable name. We will not attempt to discuss whether the law is good or bad; it is enough for us that it is law, and we trust all the law breakers may be well tranced for their calm effrontery in flying in the face of its authority. It is too absurd to say that the American Dental Colleges are even comparable one with another; to argue that because English Law permits some D.D.S's to register, it should permit all. The Americans of the better kind alike here and in their own country cry shame on many of their Colleges and write in no measured terms their adverse criticisms upon the imperfections of their courses of study and the utterly illiterate condition of many of the newly fledged D.D.S's. While it is admitted on all hands that the genus dental charlatan is as rife in America as here, it is premature to expect the English Dental Profession to be willing to admit to brotherhood the hedge row D.D.S's. which blossom forth year after year from the hundred and one colleges of the United States. We are now speaking of the under-educated, inferior type of American practitioner, many of whom are so bad that they leave their own cities, and locust like, flutter to Europe to support themselves by the lowest trade tricks of advertising and other disreputable proceedings.

Surely we need not say our remarks have no reference to those Americans who, as Mr. Smith Turner said, "practise dentistry in our midst as gentlemen and colleagues, of whom there is only good to be spoken." These men have learnt dentistry, and they benefit any country in which they may settle, and they go hand in hand with the English profession in its emphatic comdemnation of the illicit practices of unregistered Americans, and of the catch penny advertisements which disgrace practitioners, whether English or American. When it is said, the unregistered Americans who are over here do good work, and so are to be tolerated, it is manifestly putting forward a very poor plea, because it is impossible to legislate for the individual. Assuming the illicit D.D.S's., can do good work and are worth their wage, they can remain in America where their diploma is recognised, but most assuredly they cannot be permitted to do evil that good may come, by practising undisturbed in a country protected by dental laws. We admit that at present the dental profession of England is below the numerical strength required to meet the necessities of the population, and that such is not the case in America, but we fail to see why we should be preyed upon by the second or third rate men turned out by the American Colleges, and for their sakes, submit to seeing the law laughed at and an honourable profession dragged down by their bragging proclivities and inveterate habit of self-advertisement, to the level of some bubble commercial speculating society. We hear, then, with no small pleasure that at length "the powers that be" have awakened from their lethargy, and propose in the near future to adopt a more vigorous method in dealing with unregistered Americans and those who dub themselves D.D.S. without the authorisation of the General Medical Council. It is an omen of good that the "Medical Thunderer" has at length detonated against "Dental Quackery," and fulminated upon the so called "American Dentists."

"Dr." or "Mr."—which?—At the last meeting of the Odontological Society a somewhat comical incident occurred. The reader of the paper is registered by virtue of an American degree and several speakers upon the subject of the evening a method of metal cap crowning, were also enriched by the D.D.S., which some of them adopt and some keep to themselves. Now the Chairman systematically "Mr."ed everyone with charming impartiality while the D.D.S. coterie positively bristled with "Doctor"—bedoctoring even those who would fain have remained plain "Mr." The effect was ludicrous and the "Doctors" certainly showed bad taste in rebelling against the ruling of the chair, tacidly if not explicitly given when the chairman dropped the "Dr." Independently of the absence of good taste shown in their discourtesy to the chairman of a learned society, it would be far better if the move recently imported D.D.S.s were to learn that the custom of this country is to call dentists "Mr." Several leading dentists, although Englishmen, have taken the D.D.S. or D.M.D. and with a few notable exceptions have dropped the title "doctor" in order to be consonant with the spirit of English Society upon this point. In America the family doctor is called "the physician," the surgeon is spoken of as "Doctor." In England Surgeons whether pure Surgeons or Dental Surgeons always adopt the "Mr." altho many hold the M.D. of Oxford, Cambridge, London, &c. and it were certainly better for Americans who propose practising over here to fall in with the customs of the country. It seems to us that the chairman was quite in harmony with the feeling of the profession, although it must be confessed that the Odontological Society of Great Britain has not been very consistent in its action in this matter of titles.

A 'B.D.A.' COUNTERBLAST !—One of the noticeable features of the speeches delivered after the dinner of the Past and Present Students of the London School of Dental Surgery was an allusion made by Mr. Arthur S. Underwood, the Editor of the Journal of the British Dental Association, to a letter which has recently appeared in that organ. This letter signed by "an English Dentist" attempts to lay the "American Dentist" ghost. It rehearses how much Europe has done for modern dentisty, and very rightly, insists upon the fact that the introduction of antiseptic treatment has been the corner stone of our art. Further, it exposes some cases of gross professional ignorance, if not malpraxis, on the part of "a well advertised American Dental Establishment." This letter, according to Mr. Underwood, is to be reprinted, and if we understand his remarks aright, *distributed.* We can only hope the assurance was made without due thought and without the authority of those who control the publication of the Journal is question. Independently of the character of the letter, which being anonymous ought to carry no weight with thoughtful people, it is adopting the very tactics which the British Dental Association professes to condemn so strongly; It is distributing a tract cracking up English Dentistry, bringing it to the bar of the 'Voice of the people,' and saying, Oh, great British Public look and see; in this picture is English Dentistry with me as its exponent, and then look at this picture, that is American Dentistry, and there are the wretched blunders and botching work these American do! To the public the letter will, and not unreasonably, be taken as an egregious puff for English Dentistry, and more especially for the British Dental Association. Speaking of the Reforms effected in the law, as affecting Dentistry in Great Britain and the penalties incurred by non-registered dentists, this anonymous writer says, "on all such subjects our Association and its Journal give us facilities which we never before enjoyed for enlightening the public. We may safely leave the working of that Act to the Executive of our Association," and so on. The British Dental Association surely stands in no need of having its good works shown before men that they may glorify it and the Executive who guide it. That the step of publishing such a letter may be well meant, we doubt not, but we cannot but think it to the last degree ill advised, and likely to bring down derision and not unmerited *tu quoques.*

ROBBERY UNDER CHLOROFORM.—The dangers attending the use of chloroform in the hands of unskilled persons are by this time familiar to all who read the papers. There is another very unpleasant risk, however, which will probably be brought home to them for the first time by the following anecdote: A dentist commenced business in Paris, but he did not make a success of it, and his landlord served him with a notice to quit. A few days before his time was up a client called, a wealthy landowner, it is said, of Choisy le Roi, who was suffering from a toothache. The painful tooth proved to be far decayed, and he was therefore advised to have it out under chloroform. The patient was adverse to this, but finally on being shown various hideous instruments which the dentist proposed to ply, he yielded. When he recovered consciousness he had as violent a toothache as before, and a headache to boot. The tooth was safe in its place, but the dentist was not in the room. The patient called out, and went over the apartment, but found no one. A sudden thought flashed across his mind. He put his hand to his breast pocket, and found that his pocket book with £200 in notes was gone. The police are looking for the dentist. Painful to us as it is to record such an instance of gross misconduct oommitted by a person called a dentist, there is an important lesson to be learned from the story. It is this, that if persons are robbed under chloroform, there must always be a danger lest the chloroformist, if alone with his patient, be accused of having robbed his client. It emphasises how important it is never to be left alone with one's patient, while he is placed under an anæsthetic.

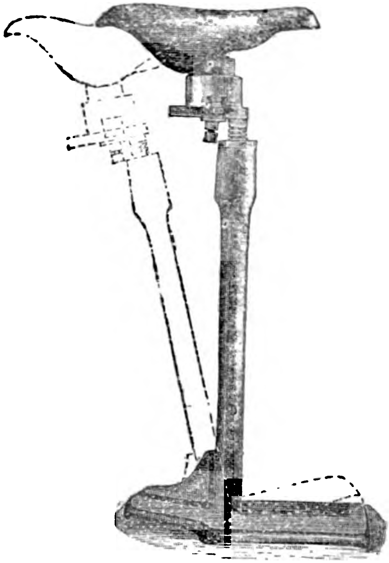
ALUMINIUM SULPHATE AS AN ANTISEPTIC.—Dr. Wade has recently called attention to the value of the compounds of aluminium and sulphurous acid as non-poisonous and unirritating antiseptics. He states that he has experimented with the sesquisulphite, which is insoluble in water, and the persulphite, which is soluble, this difference in physical properties rendering one or other of them applicable under the most diverse conditions. Although the exact germicidal power of these compounds has not yet been determined by experiment, Dr. Wade assumes that it is not below that of acetate of aluminium, which has been given as 1 to 6310, or somewhat less than half that attributed to mercuric chloride, and says that he has known 30 grains of the sesquisulphite to be taken without producing stomachic disturbance. Dr. Wade states that the insoluble sesquisulphite may be prepared by mixing the aqueous solutions of 10 parts of potash alum and 8 parts of sodium sulphite, washing the precipitate and carefully drying it. The persulphite may be prepared by heating the undried sesquisulphite with sufficient sulphurous acid to dissolve it and crystallizing without heat.

Manipulative Miscellany.

All new instruments or articles wished to be described under this heading are requested to be sent *for inspection* to the publisher not later than the 8th and 23rd of each month, they can be returned in a few days. Where, from the size or otherwise, this is impracticable, a clear and minute description will be sufficient; the sole object being, to give practitioners a description of everything new, on its own merits, and without any intention or wish to put one against another. All makers, vendors, and inventors, are invited, with strict impartiality, to contribute towards this end.

W. SMITHARD'S DENTAL OPERATING STOOL.

Introduced by Messrs. Smale Bros.



A NEW operating stool of great promise has been brought to our notice by Messrs. Smale Bros. of Gt. Marlborough Street. The special features of this article are :

The stand, which consists of two parts, a large flat part behind the pillar, and a small shoe-like part in front, the latter at a higher level and separated from the former by a thick strip of metal. This strip of metal lies directly under the pillar, and forms a fulcrum on which to tilt forward the stool to rest on the shoe or on the flat portion as necessity arises. It also serves to grip the floor. The cut shows the range of motion permitted by the tilting of the stand.

The seat, in the form of a saddle, works in a ball and socket joint, with a cleverly adapted spring which makes it self-righting.

The pillar is fitted with a box-screw 12 inches long, into which the seat works by rotation as in a music stool. The seat can be clamped at any desired height.

It will be seen that this differs almost entirely from any stool yet placed before the profession. The inventor has made a marked improvement in the seat. It is now a well established fact that a saddle-shaped seat is the most comfortable to sit upon for any long time. The spring on which the seat works allows easy movement without discomforting resistance.

The stool is light enough to be easily moved with one hand.

NEW ARTICULATOR.

By FRANCIS LEPPER.

Patented in England and America.

[N.B.—Let A represent the upper tray, B the lower, C the shutter (the part shewn appearing oval in Fig. 1.), D where the ribs meet, E the turnbuckles, F (shewn only in back view Fig. 3,) the frame on which all rest.

This articulator consists of two trays, A and B, working on bevelled edges of open slots in the frame F, and enclosing a similar sliding shutter C.

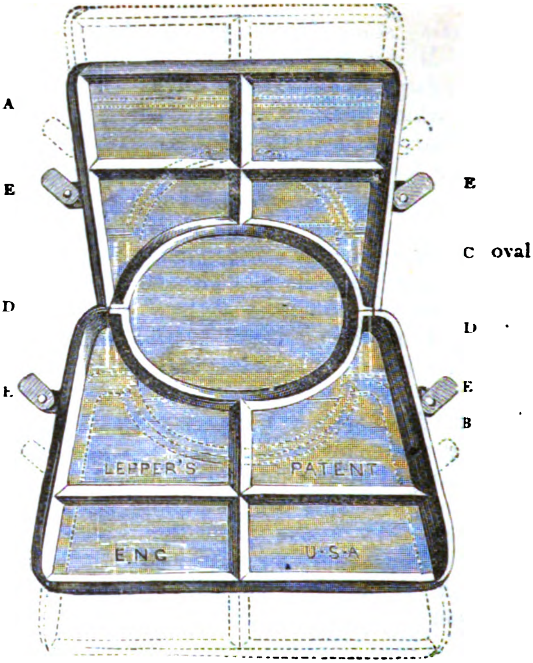


Fig. 1.

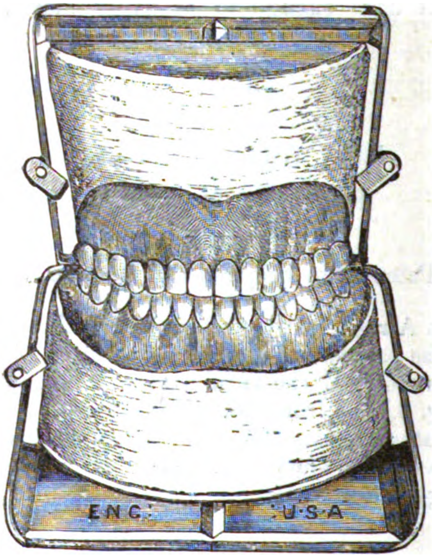


Fig. 2.

Fig. 1. shows articulator ready for use. Wet plaster is poured on the trays, and models set in position, the turnbuckles are turned round as in Fig. 2., thus securing the models firmly on the trays.

When the plaster is set, the shutter C is slid back and superfluous plaster removed. The trays move only in one plane along the frame as indicated by dotted lines Fig. 1.

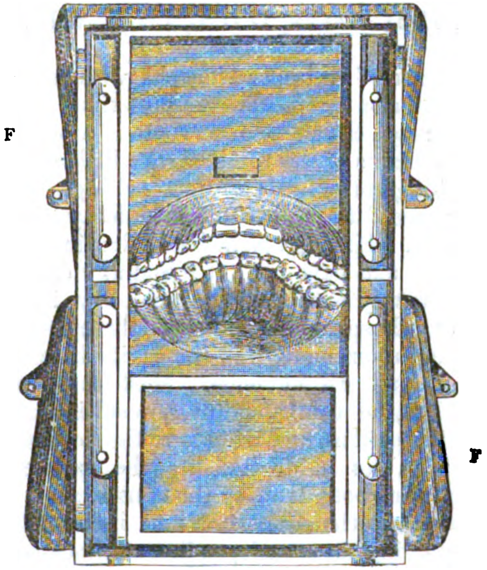


Fig. 3.

The articulator has the following special advantages, viz.: It is provided with strong and prominent stiffening ribs, which leave sufficiently lasting impressions upon the plaster models, that whenever a remake or readjustment becomes necessary, the original articulation can be absolutely depended upon on replacing the models on the trays. The removable slide C enables the operator to see the lingual aspect of the articulation. The apparatus is well finished, in gun metal, and not likely to get out of order.

Abstracts of British & Foreign Journals.

THE DENTAL REVIEW.

TREATMENT OF THE PULP, AND ROOT-FILLING.

By E. H. Allen, D.D.S., Freeport, Ill.

He takes the case of an upper bicuspid, with a large cavity on either the anterior or posterior approximal surface; the cavities nearly reach the pulp, often there is a pulp exposure, the patient complains of this tooth being a little sensitive when drinking anything hot or cold; without aching. Having the dam applied, proceed to remove all soft decay with a spoon-shaped excavator. Having reached hard dentine, even though it be discoloured and have not yet found any exposure of the pulp, wipe the cavity with carbolic acid, dry it, and place a covering of oxyphosphate cement over the nearest points of exposure, leaving room enough in the cavity to anchor a permanent filling, and fill at once. Most cases of capping exposed pulps are, he thinks, failures, resulting in pain and annoyance to the patient, and trouble to the dentist. Greater success, he thinks, lies in devitalising the exposed pulp and properly filling the roots, than by the conservative treatment. He prefers to reduce the congestion and inflammation of the pulp before applying the arsenic, as it sometimes causes severe pain; for this carbolic acid and iodoform are very efficient. A dentist should never apply arsenic without having the dam applied, unless it be impossible for him to do so, for should any of the arsenic get on any part of the gum, trouble will ensue. Use the least possible quantity, placing it directly upon the exposed portion of the pulp. Then seal the cavity with Fowler's or Gilbert's temporary stopping; don't use cotton. Then dismiss the patient with instructions to return in 2 or 3 days. At that time the pulp is in the best possible condition for removal. No serious danger would arise if the arsenic should be left in the tooth for a week or more, but the pulp would be more tender, pull apart into little pieces, making the removal more tedious. When the patient returns, again apply the dam, take a sharp bur, about No. 4 or 5, and cut right into the pulp chamber, making a large opening and entirely removing the bulbous portion of the pulp in that way; then take a new small size, barbed broach, remove the remaining portion from the roots; try to entirely remove the pulp at this sitting. Now, if all this pulp is removed, the next thing to do is to check any bleeding, dry the root canals, wipe them with carbolic acid and fill them at once, for no better time can be had, don't wait for additional treatment. The crown may be filled at this sitting. About pulpless teeth and those which have commenced giving trouble, we know that with prompt treatment the trouble can be averted by simply opening the pulp chamber freely, and applying a capsicum plaster or iodine and aconite to the gum of the affected tooth. If alveolar abscessis present the treatment best pursued is to assist nature by applying counter irritants to the gums. Sometimes the pus can be drained out through the roots, make an opening into the abscess by drilling through the process, not waiting for an opening to come of itself. Dismiss the patient, with instructions to return in a few days. By that time the flow of pus has stopped. Then the treating and filling of the roots is the next thing to do. Apply the dam, dry cavity and root canal, remove all debris possible with excavators or such other instruments as suit best. Then wash root canal with alcohol, as this removes fats. Carefully wipe dry. Then pump peroxide of hydrogen into the root. Allow it time to thoroughly permeate the tooth, root canal and all. Then dry and apply bichloride of mercury (1 per 1000), in much the same manner that the peroxide of hydrogen was applied. Dry this out and lastly wipe the root with carbolic acid. He advises filling at once and using chloro-percha and gutta percha cones root filling. Simply place a drop of the chloro-percha in the cavity with a smooth broach. Work the liquid into the roots. Capillary attraction will be found to help the chloro-percha into the roots. Then take a gutta-percha cone and push it into the root. This will probably fill a root as it can be done.

Literary Notices and Selections.

THE RATIONALE OF THE CONSTRUCTION OF ARTIFICIAL CROWNS FOR THE ROOTS OF NATURAL TEETH.

By DR. J. J. R. PATRICK, Bellville, Ill.

(Read before the Joint Meeting of the American Dental Association and Southern Dental Association, Louisville, Ky., August, 1888.)

(*Concluded from page* 1070.)

THE choice of material from which a crown or band is constructed is of equal importance with the manner of adjustment, for, if the metal is refractory or too pliable, our success will fall short of our expectations ; stability and adaptability combined are the properties required in the metals used for bands and crowns, and these properties are obtained in the following formulæ :

CROWN GOLD.

Pure gold	15 parts
Platinum	1 part

Cyanide of potassium, 5 parts fused in a coke fire for 30 minutes at least

BAND GOLD.

Pure gold	1 part
Gold coin	1 part fused

NO. 1 SOLDER.

Band gold	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax	10 parts fused

NO. 2 SOLDER.

Solder No. 1	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax	10 parts fused

The formulæ of alloys here given for gold solder will be found to contain all the following properties in a high degree :

1. Two surfaces of gold are caused to unite with solder, partly by cohesive force and partly by chemical attraction, and it follows that the solder used should not only be more fusible, but should have a strong affinity for the gold without impairing its natural qualities. For this reason, *all gold solder should be made from the gold that it is to be used with.*

2. When gold solder is used to unite two surfaces of gold that are expected to stand much strain, it is a matter of first importance that the solder should be as near the quality of the gold as possible. No baser metal than copper should enter into its composition.

3. The solder should be as malleable and as ductile as the gold that is soldered, and, when polished, be the same colour as the gold.

These separate combinations of metals are rolled into plate the thickness of No. 29 or 30, American standard gauge, and, after annealing, are ready for use.

In constructing a gold crown, the crown gold plate is put between a cutting punch and die, the punch and die being secured in a press, and a circular blank is cut at one stroke from the old plate. The cutter and die are removed from the press and a plunger and cupping-die inserted ; the blank is now placed in the counter-sink of the cupping-die, which gives it the true centre. This done, the plunger is brought down and the blank is forced through the die, which forms the cup. The plunger and die being removed, a hammer is placed in the press in the same manner as the cutter and plunger. The tooth die in relieve is selected with its corresponding intaglio die. The die in relievo is pressed into the annealed cup, the cup and die placed in the intaglio die, and both are put under the hammer and pressed together. This completes the process. The crown is made without a seam or fold, and of uniform thickness throughout.

It will be observed that the cusps and depressions in the crown made by this plan are produced by changing the surface of the metal without making it thinner, as the dies fit each other to begin with, less the thickness of the metal used. The depressions on the surface of the crown are produced by reversing the contour of the bottom of the cup, and that portion of the cup which is not depressed forms the cusps with very little pressure. This change in the surface of the metal could not be made upon a flat surface without reducing its thickness at the indentations. What we need in a metal crown is the general outline of a natural tooth, not a perfectly cusped tooth; for experience teaches that where metal crowns are used, the occluding teeth are worn, and the artificial crown must correspond to be of service; consequently, the cusps of the metal crown must be depressed, and hence the necessity of the adapting pliers.

The sides of a metal crown require to be modified to meet the requirements of each case. To meet this necessity the reversible contouring pliers are provided. These pliers are indispensable in adapting a band to the root of a tooth where the under-cut is taken advantage of. Especially are they useful in forming the bands to fit the lingual, puffy margin of the six anterior superior teeth.

That the roots of natural teeth, when in a healthy condition, are valuable as substructures for artificial crowns is no longer a question, but the extent to which reconstruction may be resorted to is a question yet to be determined.

I have two cases in point that I desire to present for your consideration. A gentleman consulted me in regard to a right superior first bicuspid that a short time previous had been broken in an attempt to extract it. The fracture occurred a little below the thin edge of the process. As the prospect of giving him relief from his suffering by attempting the extraction of what remained of the root was exceedingly doubtful, I concluded to destroy what remained of the pulp; to this end I prepared a short canula by turning up into a scroll a piece of thin platinum, the ends overlapping. This I slipped into the orifice. After cleansing and drying, I could see the condition of the fracture and what remained of the pulp; applied the usual drug for its destruction and filled the canula with wax, by which means the soft parts were distended and prevented from closing. The day following, removed the canula and the dead pulp, cleansed the parts, adapted the canula to the periphery of the fractured root, and obtained an impression of the fracture with impression compound packed into the canula. Made a cast from the impression in hard plaster, and burnished thin platinum foil on its surface, annealing several times. The platinum canula was adjusted in size to the periphery and inequalities of the fracture, and soldered in place to the thin platinum foil, which now formed the base of a cup. The walls of the cup were then strengthened by introducing a scroll of thin platinum, and the base of the cup was made strong with solder. (*The solder I use for platinum is always pure gold.*) Two holes were next drilled through the base of the cup in correspondence with the root-canals, conical screws introduced and marked at the base of the cup and then removed. Small washers were then slipped on to the screws to the point marked, and soldered. After finishing the outside of the cup a light film of liquid gutta-percha was spread over its base, the surface of the fracture dried, the cup put in place, and the screws introduced and screwed tight to the fractured root. The cup was then filled with cement and the gold crown telescoped over it.

The second case is that of a gentleman who was unfortunate enough to have the left superior central and lateral incisors broken off by a blow.

The fractures in both teeth were from the anterior to the posterior, commencing a little above and running down from the cervical border at the labial side to a little below the cervical border at the expense of the palatal side. The crown of the central incisor was broken into fragments, the crown of the lateral was whole. The process of taking the impressions of the fractured surfaces of these teeth was similar to that in the previous case, but was somewhat more complicated, owing to the obliquity of the fractures.

Fortunately, the crown of the lateral incisor being whole, the surface of the fracture served for the model.

Reports of Societies.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

ORDINARY MONTHLY MEETING, November 5th, 1888.

Mr. J. HOWARD MUMMERY, M.R.C.S., L.D.S.,

Vice-President, in the Chair.

THE Minutes of the last meeting were read and confirmed.

The following gentlemen were balloted for and elected :— Mr. Edward A. White, M. D. Edin., M. C. Aber., L.S.A. Lond., L.D.S.Edin., of 1, Highbury Place N., to be a Resident Member ; and Mr. Charles F. Ives, M.D.S. New York, .62, West 35th Street, New York, U.S.A., to be a Non-resident Member.

The Librarian (Mr. Felix Weiss) stated that the usual periodicals had been received since the last meeting of the Society, viz.: the Smithsonian Report, the Calendar of the Royal College of Surgeons, the Scientific Proceedings of the Royal Society of Dublin, the Transactions of the Royal Society of Dublin, the Catalogue of the Annual Museum of the British Dental Association.

The Curator having no Report to present, the names of visitors were received, and the Chairman called upon the contributors of Casual Communications.

Mr. Storer Bennett stated he had for some time employed the S.S. White nerve-devitalising fibre, which contains tannin, arsenic, opium, and creosote, and is designed to destroy pulps. This application was less painful, and as good as or even better than arsenic. Another preparation he wished to speak of was bibulous paper cones, for drying out pulp canals. For fine and difficult pulp canals they were very useful; they were very thin and stiff, and so were useful for reaching narrow places difficult of access.

Mr. R. H. Woodhouse said he had employed identical nerve-devitalising fibres for some time, and had found them very serviceable. He believed Mr. Browne-Mason, of Exeter, had introduced them to the profession of this country. The fibre was especially useful where there was disease in the fang of a tooth.

Mr. Redman had also used the fibre. He found it gave less pain than the ordinary preparations. He had also found it advantageous to powder it with cocaine. Its action was quicker than other devitalisers.

Mr. Boyd Wallis said he held in his hand a model of the mouth of a young girl, aged from fourteen to fifteen years, in which a wisdom tooth was erupted. The girl had first menstruated at the age of ten. He also presented a model of the mouth of a gentleman aged about forty, in which there were no laterals in the upper jaw, and only six incisors in the lower jaw. He also showed an electric battery with a new arrangement of switchboard. The battery contains four Leclanché cells which work it to perfection. This would run for two years with very little trouble indeed. For one light a galvanometer is switched on at one end; two cells work one mallet perfectly. Each cell has a carbon rod up the centre, with a series of rods round it surrounded by a zinc column. A special feature is an arrangement on the battery box by which the cells can be reversed with the advantage that they can thus be used up equally.

Mr. Walter Coffin said it was well known that General Washington was very dependent upon the dental profession. It might therefore be of interest to the Society to see an autograph letter from the General to his dentist, Dr. Greenwood, expressing his gratitude for skilful treatment received, and enclosing a fee.

Mr. F. J. Bennett then read his paper on the Structure of Dentine, [see page 1121]

DISCUSSION.

The Chairman felt the paper to which they had listened with so much interest opened a wide region for thought. As Dr. Ord was present at the meeting, he hoped he would open the discussion.

Dr. Miller Ord said he rose in obedience to the request from the Chair, and desired first to express his congratulations to Mr. Bennett upon the ability and suggestiveness of the paper. In the commencement of it, Mr. Bennet had referred to some papers of Dr. Ord's, as bearing, from his point of view, upon his researches. These were scattered papers and covered a good deal of ground. It happened some two or three years ago that Surgeon Major Bidie—now Sanitary Commissioner—wrote a letter to *Nature* stating that he had observed that certain glass vessels upon which white ants' mud had been deposited, became etched over that portion which had been covered, and asking whether any acid existed in the secretions of these ants capable of acting upon glass. It was known to Dr. Ord, from his long association with Mr. George Rainey, that he had observed that glass surfaces were eroded when exposed to the action of carbonate of lime deposited in the presence of a colloid. He had shown that a perfectly clean and smooth glass slide, after being placed for a time in a solution of gum in the presence of carbonate of lime, became quite dim, and was eaten out into little shallow round depressions. When carbonate of lime was deposited in gum it was seen, instead of taking the usual form of a rhombohedral crystal, to take a spherical shape, and he demonstrated that the colloid annulling the polarities of crystallisation, allowed simple attraction to work unhindered, so that where there should be a crystal with plane surfaces and sharp edges, we got a sphere. Where a colloid was formed on the surface of the glass it drew away molecule after molecule from the glass into itself, which formed a little bed for itself in the shape of a slight hemispherical depression. Dr. Miller Ord repeated Mr. Rainey's experiments, using gum, albumen, and glycerine and albumen together, and after some length of time he obtained specimens much more remarkable than Mr. Rainey's, simply owing to the long exposure in the presence of colloid and a perfectly neutral salts. It then occurred to Dr. Ord to try ivory and mother-of-pearl, in a parallel series. With glass he used glycerine and nascent carbonate of lime, with ivory and mother-of-pearl, carbonate of soda and glycerine, although in some experiments no carbonate of lime was used and yet marked etching was obtained. That raised a question of a different sort, and it might be said that these were not acted upon by carbonate of potash, or carbonate of soda without glycerine. What he (Dr. Ord) believed to be the explanation was, that whereas in the glass the etching had come about by "molecular coalescence," in the last case we had an instance of "molecular disintegration." By "molecular coalescence" Mr. Rainey meant the condition which occurred when he found spheres of carbonate of lime in gum, and that any two or more spheres coming into contact with one another gradually coalesced into one perfect sphere. When such spheres—really little pearls—were placed in a fresh solution of gum, they underwent dissolution, the earthy matter being drawn out of them, leaving a "ghostly" sphere of the organic matrix, and this Mr. Rainey called "molecular disintegration." The contact of the glycerine and carbonate of potash with the surface of the ivory or mother-of-pearl introduced a new colloid, and it would in like manner disturb the original arrangement, drawing out the earthy matter and leaving the matrix behind. In this way Dr. Ord explained the appearances obtained. Mr. Bennett had, in his experiments, eliminated the carbonates and dealt only with the glycerine. It was very interesting to notice that in proportion as the structure was less compact he had more readily withdrawn the earthly material from its organic matrix, and where the organic matrix was more completely formed, and more completely solid, he had left the organic matrix well preserved, almost as if he had dissolved the earthly matter with an acid. Referring to the cells he

(Dr. Ord) could not express an opinion except that they might be a rearrangement of the earthy matter. Mr. Bennett appeared, he thought to have hit upon something quite new which might prove of great value in such researches as those he was pursuing. He seemed able to withdraw from solid teeth the inorganic without distributing the organic matter. This, at least, to Dr. Ord, appeared to be the explanation of Mr. Bennett's interesting results. Dr. Ord said he could not say more until the specimens had been examined by polarized light to see whether the cells were organic spheroids or inorganic matter.

Mr. Stocken asked whether Mr. Bennett had been careful to examine the glycerine he used, as ordinary glycerine sometimes generates an acid if kept.

Mr. Fairbank asked what Mr. Bennett considered was the true nature of the cellular structures or those portions of tubes he described. Whether they are simply the original cells, and that the membranous layers in between these apparently cellular layers are the remains connecting the membrane which would connect the cells together and so form dentinal tubes?

Mr. Hunt asked what was the date of Mr. Rainey's experiments.

Mr. Walter H. Coffin said apart from the physiological and anatomical interest, which was great, Mr. Bennett's investigation suggested an extension of the dissolving powers of glycerine. It seemed to rank with alcohol and water, like the trinity of the old alchemists; and it would appear that its dissolving powers were not quite yet exhausted, and that we had more to learn about it.

Mr. Storer Bennett said, without being actively engaged on the experiments narrated in the paper, he was himself able to bear testimony to the very great care that had been right to accept the results of scientific experiments on trust, there was in the present case a certain juristification for accepting them as true, as far as they went, until they were disproved. He wished to emphasize the point to which Mr. Coffin had referred, viz., the remarkable properties which glycerine seemed to possess, although originally merely a bye-product in the manufacture of soap. As to the explanation which Mr. F. J. Bennett offers about the tubes and membranes, that might be accepted or not, but there could be no doubt that the appearances described were easily seen under a microscope, although of course the correctness of the inferences drawn from them could only be proved by further investigation.

Mr. Betts suggested that perhaps it might be possible that the investigation which Mr. Bennett had undertaken, might lead to some discovery with regard to erosion, since acids as well as fats were very apt to lodge in the gums.

Mr. Hern desired to ask whether Mr. Bennett had experimented with the action of acids upon the tissues, and compared the results with those obtained in his glycerine solution experiments.

Mr. F. J. Bennett, in replying, said he had no doubt in his own mind that the appearances he had described were not due to a rearrangement of earthy material. There was undoubted proof that it really represented a natural structure which had not been hitherto recognised. We know similar examples in interglobular spaces, and in other instances. Salter said if the inside cap of young forming dentine were examined, it would be found to possess a cellular appearance, very much like that of interglobular dentine, and the appearance in his (Mr. Bennett's) specimens were very similar. With reference to polarized light, he had already submitted his specimens to it, and there could be no doubt that they were calcified structures. He thought that persons interested in the subject under discussion could not do better than read Dr. Ord's papers, which were more interesting and formed a sort of second chapter to the leading work on the subject. Mr. Rainey's researches were published about 1858. Replying to Mr. Stocken, he (Mr. Bennett) had not in his present research paid any regard to the question of the acidity of the glycerine, as he had obtained certain results, and had striven to follow these up, using the same (the common) glycerine. He proposed, however, using Price's glycerine upon a subsequent occasion. Mr. Fairbank had asked to what particular part the cellular substance belonged, but that branch of the investigation he proposed to leave for the present; he might add that he believed them to be *bonâ-fide* dentinal cells. In reply to Mr. Betts, he had to say he had submitted specimens of erosion to glycerine, but so far they had not behaved as they should have done. In response to Mr. Hern, Mr. Bennett said he had never seen any changes produced in dental tissue which in any way resembled those he had shown that evening, except when treated in the way described. He had in some cases submitted teeth to the action of glycerine, then decalcified them in chromic or hydrochloric acid, but there was no resemblance between specimens under the action of glycerine and those under the acids.

The Chairman, having put the usual vote of thanks to contributors, announced that the next meeting of the Society would take place on Monday, December 3rd, when a Casual Communication would be made by Mr. J. Bland Sutton, F.R.C.S., on "Some Congenital Pharyngeal Tumours," and a paper would be read by Dr. Wm. Mitchell on "Some Suggestions on Metal Cap Crowns."

The Society then adjourned.

Dental News.

THE ANNUAL DINNER OF THE PAST AND PRESENT STUDENTS OF THE LONDON SCHOOL OF DENTAL SURGERY HOSPITAL.

THE annual dinner of the staff and past and present students of the Dental Hospital of London and London School of Dental Surgery was held on Saturday evening, Dec. 1st, at the Holborn Restaurant. Mr. J. Smith Turner presided. A company of about 120 sat down. Among the visitors were Mr. Christopher Heath, F.R.C.S., Mr. Bryant, F.R.C.S., Mr. Hallett, Dr. Curnow, Dr. Stack, Mr. Underwood, Mr. Weiss, Mr. Rymer. Mr. Trimmer.

The Chairman, in giving the toast of the "Past and Present Students," said the toast was one which was continually growing in importance, for, as a matter of course, the number of past students increased year by year; and, although not as a matter of course, yet as a matter of fact, year by year the number of present students increased. Ever since the Dental Hospital had been established and a curriculum formulated which could call forth the intelligence, and the endurance, and the manipulative skill of the students, and ever since it had been made manifest that dentistry was a profession which might be followed by gentlemen in an honourable, way and in a way conductive to their own advantage and to the welfare of society, the number of young men who had adopted the profession had annually increased, while there had also been a marked increase in their educational standard and intelligence. It was not yet 10 years since the labours of Mr. (now Sir) John Tomes and his colleagues culminated in the passing of the Dentists' Act, which had done so much to elevate the profession. It was through the influences of Sir John Tomes that Sir John Lubbock—that prince of conductors of private bills—undertook the care of the bill, and so assiduously did he attend to his task that it was passed in a single session, and that he believed was an instance almost unique in the history of parliamentary legislation in this country. The Act has been viewed variously by various people, and criticised sometimes unfairly; but whatever it had done or had not done no one would dispute that it had done a very important thing in giving them a distinct title as dentists if they passed the examination. If they registered that title they were marked men—marked as men possessed of special education for a special purpose—as men who had gone through a preliminary examination in arts the same as that which was gone through by medical students; and they were also marked as men who had gone through a long and expensive curriculum in order to qualify themselves for the position which they held. The diploma of licentiates in dental surgery was issued by four distinct licensing bodies—the Royal College of Surgeons in Ireland, the Faculty of Surgeons and Physicians in Glasgow, the Royal College of Surgeons in Edinburgh and the Royal College of Surgeons in England. There was a number of gentlemen firmly seated in public estimation as dentists when the Act was passed, who thought it was *infra dignitatem* to present themselves for examination, and they were not interfered with. Then there was a class of men who had some remote claim to practise dentistry in some form or other—in a form known perhaps to none but themselves—(laughter)—who assumed the title of dentist when it was nobody's title, and these gentlemen were allowed under certain clauses of the Act to come upon the Register, but only those who passed the examination could possess the title of L.D.S. The Act has been attacked by that hydra-headed monster quackery. The first assault was made upon the title of L.D.S. These gentlemen saw at once the advantage that would attend the title, and they made haste to try and assume it on spurious grounds. Some well-directed prosecutions had he thought, stopped that for the present. They were now brought face to face with another class of charlatans. Some of these, he was sorry to say, had their names on the Register, and thus protection was afforded to certain persons who would not otherwise be practising. The public were the victims of these men. The public seemed ever ready to be duped by those who were willing to dupe them. They seemed to think that by going to these spurious advertisers they would get at a small cost the advantage of the respectable practitioner. They liked a lot for their money and they got it. (Laughter.) The public also liked to be served by gentlemen with big-sounding titles, and hence all over the country they found men advertising themselves as doctors. At one time they advertised themselves as doctors of dental surgery, but they soon found out that dental surgery was a title that did not belong to them. Now they had gone further, and taken advantage of the ambiguous title of doctor. They had even gone further than that — and this was the cruellest thing he knew in the annals of quackery—and called themselves American dentists. All over the country they were to be found advertising themselves as practising American denistry. Some of them he knew had never been within 3,000 miles of the Atlantic coast. Some few of them had made a run across, and obtained a diploma at those schools which every respectable American dentist would gladly see wiped from the face of the earth. They had among them American dentists who came among them and were received as colleagues—(cheers)—and with whom they were proud to associate, and he believed he expressed the sentiments of every dentist present when he said he heartily sympathised with these gentlemen in the indignation they felt at the manner in which this so-called dentistry had brought disgrace upon their profession. (Cheers.) It seemed to him that they would have the quack—as they had the poor—always with them ; but they must be patient, and remember that patience and skill and integrity were valuable possessions, and must ultimately tell in favour of their possessors. If driven from one position these people would take up another, but in the meantime it was their duty to enlighten the public so far as the value of the title L.D.S. was concerned. In concluding, he congratulated the students upon the excellent accommodation provided for them at the hospital, and upon the very excellent staff under which they worked.

Mr. Ashley Gibbens responded for the present, and Mr. W. H. Dolamore for the past students.

Mr. A. P. Gould, M.S., F.R.C.S., next gave "The Dental Hospital of London and Staff." He remarked upon the progress of dentistry, and said it was not so very long ago that it was 2s. 6d. to have a tooth drawn by a doctor, 1s. to be pulled round a chemist's shop, and 6d. to have one's jaws broken in a smithy. (Laughter.)

Mr. F. Canton responded.

Mr. E. Trimmer (secretary to the college of Surgeons), proposed "The London and other Schools of Dental Surgery," which was responded to by Mr. Arthur Underwood and Dr. Stack.

Mr. S. W. Sibley next proposed "The Health of the Chairman," which was drunk with musical honours.

The Chairman, in his reply, mentioned that the hospital was in need of funds, and said it was a curious thing that most of the money for the support of the hospital had been received from the dental and medical professions.

Some very good music was giving during the evening by members of the staff and their friends.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: PASS LIST.

The following gentlemen having passed the necessary examinations, at a meeting of the Board of examiners on the 7th instant, were at the same meeting admitted Licentiates in Dental Surgery:—Ivan John Howard Boyton, William Henry Dolamore, Frank Gannon Grimsdale, Frank Arnold Harsant, Albert Stephen Hayman, Hubert Lindsay Curling Hope, Frederick Richard Howard, William Thompson Madin, Edward Alfred Manton, Alfred Ernest Marten, James Mountford, Athol Cravnant Pritchard, Leonard Charles Smith, Percy Lawrence Webster, Charles Winterbottom, M.R.C.S.

Eleven candidates were referred. The next examination will be held in May, 1889.

APPOINTMENTS.

Henry G. Read., M.R.C.S., L.R.C.P., Lond., L.S.A., L.D.S., Eng., appointed Dental Surgeon to the National Dental Hospital, *vice* Thomas Gaddes, resigned.

T. G, Read., D.M.D., Harv., L.D.S., Eng., has been appointed Assistant Dental Surgeon to the National Dental Hospital and College.

Correspondence.

[The Editor does not hold himself responsible for the opinions expressed by his correspondents.]

PLASTIC FILLINGS.

To the Editor of the "British Journal of Dental Science."

SIR,—On page 1096 of your issue for December 1st, it is stated that Dr. Bonwill was the originator of the so-called "ink test" for amalgams. Allow me to state that this test was devised by myself, and the details of my experiments with this and other tests will be found in the earlier issues of this Journal. The systematic testing of amalgams was unknown when I took the matter up and my experiments, as will be seen from the volumes referred to, extended over many years.

THOS. FLETCHER.

Warrington.

AMALGAM FALLACIES.

To the Editor of the "British Journal of Dental Science."

DEAR SIR,—In your October number appears a criticism of a paper written by me upon the subject of Amalgam Fallacies from Mr. Thomas Fletcher.

Mr. Fletcher objects to me making "statements," that is, he thinks I should prove them as I made them. Perhaps that is true, but it is not always easy to prove one's belief, and inability to prove an opinion should not keep a man from stating it if it is an honest one. The listener can accept it or not, as it seems to commend itself to his own judgment. I am aware that I made statements of this character, but they are my belief, and it is experimentation with known alloys that have led me to these beliefs. They can be taken for what they are worth, as the opinion of one man who is not interested in the sale of alloys and who has experimented with them more or less for the last seven years.

Fillngs of *pure* silver amalgamated with mercury will not set, neither will filings of pure tin. But filings of silver alloys amalgamated with mercury *will* set, therefore, it is the combination of metals that produces the effect, is it not? That is the position I took. Coin silver amalgam will set, but coin silver is an alloy. Precipitated silver amalgam will set but that does not disprove my point, because precipitated silver is in a very different condition from a filed alloy. Besides that, the setting of precipitated silver amalgam is not exactly like the setting of an alloy amalgam.

I said neither zinc nor gold were of value as dental alloys, I base this opinion upon my comparative experience with alloys containing these metals and those that did not contain them, and I will add that I am no alone in my opinions. Dr. Bonwill says, "No platina nor zinc for me."

I have made splendid alloys that gave the very best results in that best of all tests—mouth tests—from silver and tin, and I have done no bette when I have added from 3 to 10 per cent. of gold, so I may be excused if I count gold as a fallacy. As to platinum it is pretty generally conceded on this side of the water by the majority of operators that platinum is more than worthless, that it is injurious to an alloy. I suppose Mr. Fletcher is aware that a published essay of his "platinum (?) and Gold Alloy," showed silver 39.50; tin 55.40; gold 5,10; Platinum *none.*

I said it was a fallacy to suppose that squeezing an amalgam injured it, and my statement is easily proved for *hundreds of operators squeeze their amalgam and yet do splendid work.* I did not say that squeezing some metals out would be an improvement—Mr. Fletcher should quote me correctly, I said that it was a fallacy to suppose "that some of the metals will be squeezed out while others will not." But if such a thing occurred it would be an advantage, "for what is removed will be the uncombined excess.

The writer has not gone into this subject ignorantly as Mr. Fletcher insinuates. Time, which proves all things, may show that accepted idea are nothing but "statements."

Respectfully,

A. MORSMAN.

ANSWERS TO CORRESPONDENTS.

CHEMICUS.—We can only repeat we shall be pleased to hear from you if you will write in a more appropriate strain. We cannot undertake to return M.S.

L.D.S.—You cannot have seriously supposed we could publish such a letter, possibly the "professional house cleaner" may appreciate such language, we do not. If you wish to substantiate your charge you should send us a copy of the advertisement in question, but it does not disprove our correspondents' statements for you to say that he is as bad as his neighbour.

A LOVER OF JUSTICE ought if he reads his Journal to know that we cannot take notice of anonymous letters unless authenticated by the writer's card containing his name and address—of course not for publication.

MR. THOMPSON, Glasgow.—We are much obliged to you for your letter, but we do not think its publication would serve any useful end. We have already drawn attention to the abuse in question, and even by your own showing there is no blame to be directly attached to any particular individual. The system is faulty, but it is the best we have, and must be tolerated until some remedy is to be procured; you do not seem to have come across the panacea.

D.M.D. IN FUTURO will be answered in our next issue.

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